Scientific American.

THE ADVOCATE OF INDUSTRY, AND JOURNAL OF SCIENTIFIC, MECHANICAL AND OTHER IMPROVEMENTS.

VOL. XIV. NEW YORK, JANUARY 8, 1859. NO. 18.

THE
SCIENTIFIC AMERICAN,
PUBLISHED WEEKLY
At No. 128 Fulton street, (Sun Buildings,), New York,
BY MUNN & CO.

O. D. MUNN, S. H. WALES, A. E. BEACH.

Responsible Agents may also be found in all the principal cities and towns of the United States.

Single copies of the paper are on sale at the office of publication, and at all the periodical stores in this city Brooklyn and Jersey City.

Sampson Low, Son & Co., the American Booksellers, 47 Ludgate Hill, London, Eng., are the British Agents to receive subscriptions for the SCIENTIFIC AMERICAN.

TERMS—Two Dollars per annum.—One Dollar in advance, and the remainder in six months.

☞ See Prospectus on last page. No Traveling Agents employed.

New Agricultural Products.

Our Patent Office has accomplished an incalculable amount of good in the agricultural as well as the mechanical department, especially in the introduction of new and useful seeds of foreign origin, capable of profitable cultivation in our country. The Chinese sugar-cane has now become one of our most valuable crops; sugar-cane cuttings imported from the West Indies have resuscitated the decayed sugar plantations of Louisiana; barley from Tuscany and wheat from Turkey have been cultivated with success, and have taken the place of inferior varieties. A great number of other grains and seeds have also been successfully introduced through the Patent Office, and distributed over every section of the country. The person who makes two blades of grass grow where only one flourished before, is held to be a benefactor; and when this is taken as a standard, our Patent Office should be considered one of the most beneficent institutions in our country.

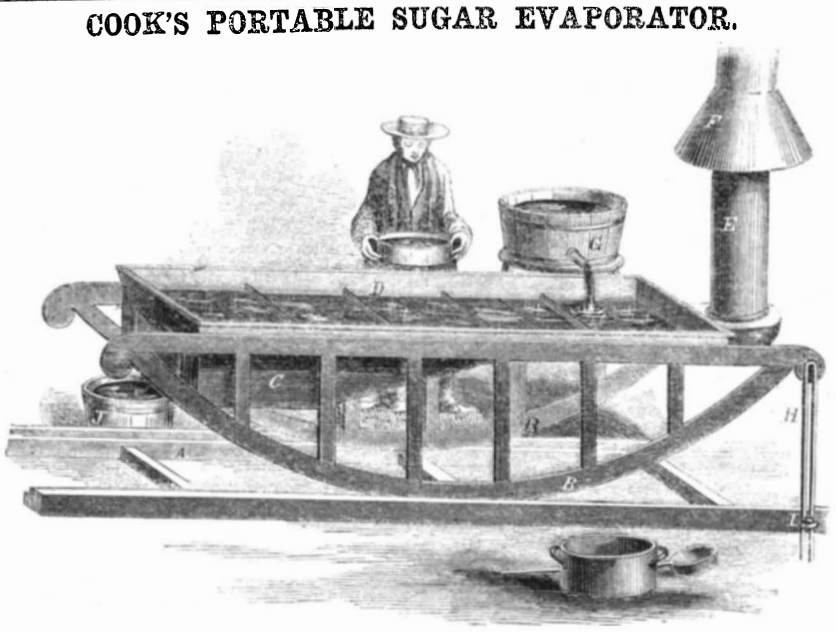
We conceive it to be a positive benefit to cultivate a very great variety of useful crops. In countries which are devoted to the raising of a very limited number, there is great danger of famines, such as in Ireland, where the potato was the chief food of the people, which esculent was blighted in 1846, and was followed by a great famine. Although many new seeds have been introduced from other countries, there are still several others equally deserving the attention of those in authority.

In the East Indies there is a number of cereals and pulses which are exceedingly nutritious, and deserving of introduction; one of these, called Boot (the *soja hispada*), contains 46 pounds of nitrogenous matter in every hundred cwt.; 12½ pounds of oil, 13 ounces of phosphorus, and 1¼ ounces of sulphur. To the vegetable-eating Brahmins, some pulses are what beef and other flesh meats are to us. They mix about one fifth of some liguminous seed—such as *Cajanus Indicus*, their favorite—with rice, and grow as fat and oily on the regimen as beef-eating Caffres. We have introduced the Chinese sugar-cane, and the yam from the East; but in Hindostan there are a vast number of peculiar, useful vegetable productions, which no doubt can be cultivated in some sections of our country.

Consumption.

A physician of the homeopathic school has furnished us with the following recipe for the weakening night sweats that are so common in consumptive cases. It is to rub the patient, every three or four days, all over with olive oil. By this means the perspiration will be reduced, and the strength of the sufferer be kept up.

COOK'S PORTABLE SUGAR EVAPORATOR.



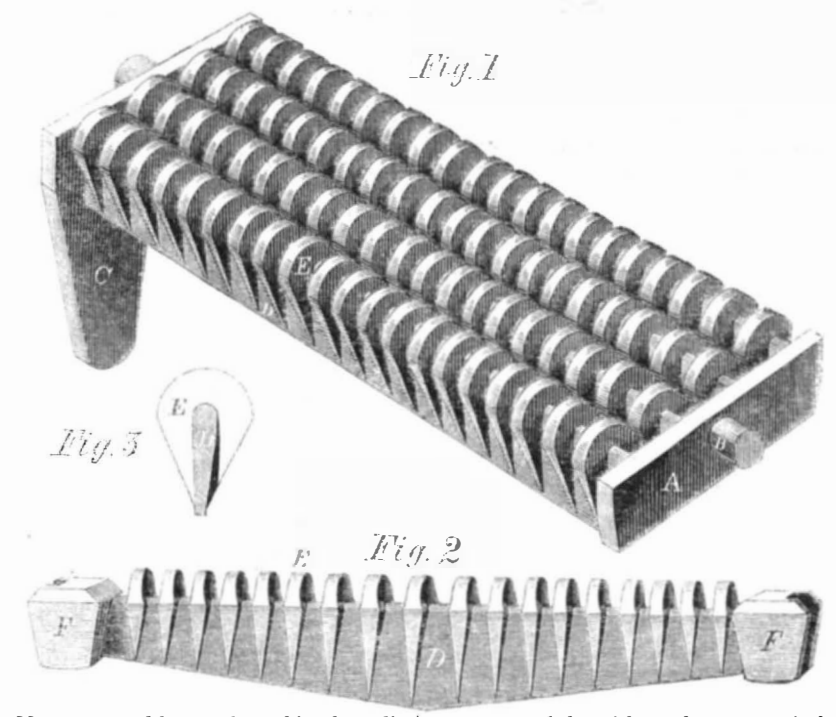
The principal purpose or which this invention is designed is to make refined sugar direct from ripe China cane, and be so portable, cheap, and convenient, that every farmer can possess one if he wishes, and refine his own sugar from cane of his own growth. Our illustration is a perspective view of the arrangement, showing the evaporator in operation.

Guides, A, are laid on the floor; these are made like grooved rails, and are intended to preserve the position of the evaporator while it is being rocked or inclined. Two rockers, B, formed of malleable or cast iron riveted together when cold (hoop iron being strong enough), supports the fire chamber, C, and evaporator, D. The door of the fire chamber, C′, is seen in the front. The evaporator or pan is made of light protected copper or other metal sheathing crimped into flanges or spaces, so as to form a continuous transverse channel one inch and a-half deep and five inches wide. The chimney, E, carries off the smoke, and draws the fire under the evaporator, and the steam is carried away by a hood, F, communicating with the roof of the building.

The sirup from the mill is poured into the tub or reservoir, G, from which it runs into the top end of the evaporator, and the frame and rocker being secured at the desired angle to ensure the best evaporation by a rubber, H, and set screw, I, the juice runs down the grooves; and as it is running, it must be skimmed by a skimmer that fits between the sides of the evaporator, D, and the pure sirup runs off into a receptacle, J, at the lower end. The firing, skimming, and grinding must go on steadily together, and a constant stream of pure sirup will be the result.

The inventor is D. M. Cook, of Mansfield, Ohio, and he obtained a patent June 22, 1858. Any further information concerning details of construction, price, sizes, and their capacity for work, can be obtained by addressing the inventor as above.

SAVAGE'S SELF-CLEANING GRATE BAR.



Much time and heat is lost while the ordinary furnace bars are being cleaned and the clinkers removed by the common fire-rake or poker; and the grate bars themselves are so constructed that either only comparatively large coal can be employed, or the atmospheric surface is so small that it is impossible to attain anything like perfect combustion.

To provide a grate bar that is self-cleaning, a larger coal surface and greater air surface, S. T. Savage, of Albany, N. Y., has invented the subject of our engravings. Fig. 1 shows a segment of a grate for a locomotive, consisting of four bars; as many of these may be put together as the width of the fire-box permits. The bars, D, are cast with end pieces, A, which are provided with bearings, B, on which they can turn, and these bearings fit into corresponding recesses in the fire-box, so that the grate segments can be entirely upset by moving the projection, C, by a lever; all the projections, C, being connected by links. The grate bar, D, is cast thin, with a series of arched projections, E, upon it; these spring from the bottom of the bar at an angle to nearly a level with the top of the grate bar, this point being also the widest part of E, and from this the arch is formed that gives a curved surface to the coal, and keeps the coal up from the main bar, doing away with the flat surface on which the coal lies dead on an ordinary bar, so that a free circulation of oxygen is secured through the fuel. It cleanses itself of ashes as fast as they accumulate, having no surface for them to collect upon, while the clinkers (should there be any) can be removed by capsizing.

Fig. 2 shows a bar suitable for any kind of grate, constructed on the same principle, only cast singly, with boxes, F, at the end, to rest in the fire box. The boxes are cast hollow, and air can find its way in them, to keep the ends cool, and also feed the extreme back and front of the furnace. Fig. 3 is a vertical cross section of this bar, illustrating the relation between the arch, E, and the main bar, D.

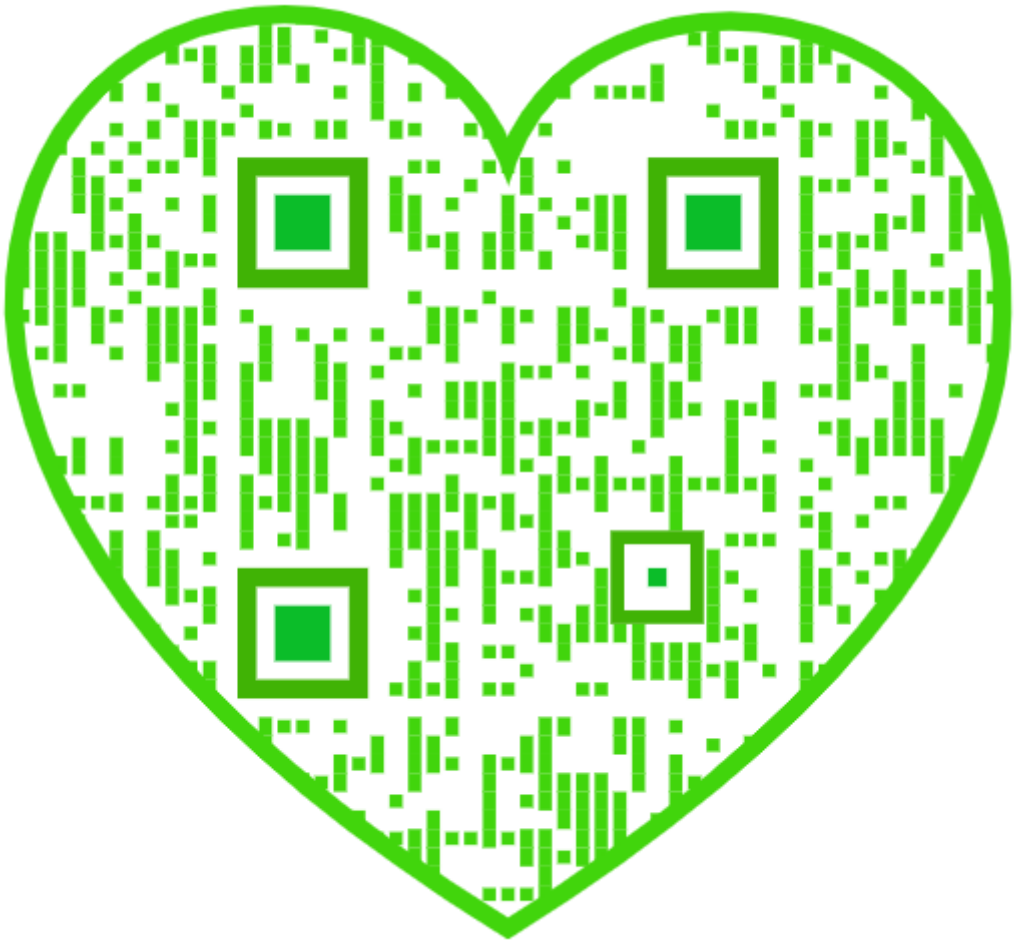
A great saving of metal, in comparison with the strength and durability, is effected, and as the draft is sufficient, the heat is continually carried up among the fresh coal, and the distribution of the air passages are so diffuse that the bars are kept comparatively cool. Wherever a furnace or large fire is required, these bars are the very thing; for boilers or melting furnaces they are equally applicable.

They were patented November 23, 1858; and any further particulars can be obtained from the inventor or the manufacturers, Messrs. Treadwell, Perry & Norton, No. 110 Beaver st., Albany, N. Y.

Ventilating Waterproof Cloth.

The Paris *Moniteur Industriel* states that 20,000 tunics, rendered waterproof and yet porous, were served out to the French army during the late war with Russia. They were prepared in the following manner:—Take 2 lbs., 4 oz. of alum and dissolve it in ten gallons of water; in like manner dissolve the same quantity of sugar of lead in a similar quantity of water, and mix the two together. They form a precipitate of the sulphate of lead. The clear liquor is now withdrawn, and the cloth immersed for one hour in the solution, when it is taken out, dried in the shade, washed in clean water and dried again. This preparation enables the cloth to repel moisture like the feathers of a duck's back, and yet allows the perspiration to pass somewhat freely through it, which is not the case with gutta-percha or india-rubber cloth. The method of thus preparing cloth is not altogether new, but such cloth being employed by the French army is some evidence of its utility.

© 1859 SCIENTIFIC AMRICAN, INC.



Issued from the United States Patent Office

FOR THE WEEK ENDING DECEMBER 28, 1858.

[*Reported officially for the Scientific American.*]

*** Circulars giving full particulars of the mode of applying for patents, size of model required, and much other information useful to inventors, may be had gratis by addressing MUNN & CO., Publishers of the SCIENTIFIC AMERICAN, New York.

BOOT JACK—Frederick Ahl, of West Meriden, Conn.: I am aware that boot-jacks have been made where an inflexible portion pressed on the upper surface of the foot of the boot, I therefore do not claim that as such.

But I claim the described arrangement of the platform, A, vibrating arm, F, and cross bar, H, when the whole is constructed, arranged and made to produce the result substantially as described.

LETTER ENVELOPE—James G. Arnold, of Worcester, Mass.: It is evident that some variations from the above will be necessary in making the different sizes and styles of envelopes, but they being governed by the said principles of construction and producing the same results, will suggest themselves in each case; therefore I do not wish to be understood as limiting myself to the precise forms or proportions of parts shown, as I do not claim these.

But I claim, as a new article of manufacture, making letter envelopes by cutting, folding and pasting the paper substantially in the manner and for the purposes set forth and described.

I also claim folding narrow folds at the ends or sides so as to come inside between the face and back in the manner and for the purposes substantially as set forth and described.

MANUFACTURE OF PYROGENIC OILS—Luther Atwood, of Brooklyn, N. Y.: I claim forming oleaginous vapors from substances yielding pyrogenic oils, by the action of the heat of a properly regulated current of products of combustion passing over and above the surface of the mass operated on with or without the aid of external heat, substantially as described and for the purposes set forth.

APPARATUS FOR DESTRUCTIVE DISTILLATION—Luther Atwood, of Brooklyn, N. Y.: The combination and arrangement of a "distilling tower" and receiving vessel substantially as described, with a steam blast, or its equivalent, in the combination for the purpose of producing an induced current, substantially in the manner and for the purposes described and set forth.

APPARATUS FOR DESTRUCTIVE DISTILLATION OF WOOD, &c.—Luther Atwood, of Brooklyn, N. Y.—I claim, First, The use of the inner case, V, in the manner and for the purposes substantially as set forth.

Second, The described arrangement of the flues, N, leading from the annular passage, E, into the distilling tower, A, substantially as and for the purposes set forth.

Third, The combination with the distilling tower of the combustion chamber or fire place, A', when so arranged as to supply products of combustion by a downward draught through the fire place substantially as described.

LAMPS—William W. Batchelder, of New York City: I claim the small tapers or wick tubes, D, placed on both sides of the flat burner or wick tube, C, in combination with the cap, A, when the said tubes and cap are used without a chimney substantially as set forth for the purposes described.

MANUFACTURE OF ARTIFICIAL FUEL—William A. Bradley and Jacob Bigelow, of Washington, D. C.: We claim the manufacture of artificial fuel made from refuse bituminous coal anthracite or charcoal, as set forth, combined with the substances herein described, the whole made in the manner and for the purposes set forth.

GRAIN MEASURE—Job Brown, of Lawn Ridge, Ill.: I am aware that tallying machines have been previously used and arranged in various ways, and I therefore do not claim broadly such device irrespective of the particular arrangement of parts shown and described.

But I claim as new, and desire to secure by letters patent, as an improved article of manufacture, a grain tally having a slide, H, operated by a pendent, g, and spring, I, a lever, F, pall, J, ratchet wheel, D, and indicating belt, C, the whole combined and arranged as shown and described.

[By this invention grain taken to the mill can be accurately tallied. It consists in applying to a grain bin, or receptacle of any kind containing grain, an endless graduated belt arranged with certain mechanism, so that the mere placing of the measure beneath the bin will open a slide or door, and allow the grain to pass into the measure and also actuate the belt so as to record or register the measure, the slide or door closing as the filled measure is removed.]

REVOLVING FIRE ARMS—John W. Cochran, of New York City: I claim first, The hinged or jointed thumb-piece of the hammer or cock, constructed and arranged, and having the functions substantially as set forth

2d, I claim the worm-wheels upon the cylinder shaft, and the tumbler shaft or hammer shaft, combined and operated as and for the purposes described.

3d, I claim the means substantially as set forth, for allowing the cylinder to be rotated within its frame independent of the shaft of the hammer or tumbler, and also allowing of the detaching of the cylinder and its shaft from the frame and from the means of rotation.

COMPENSATING PENDULUM FOR CLOCKS—Wright S. Coffinberry, of Grand Rapids, Mich.: I claim the combination of two metals of different expansibility in the manner and for the purpose set forth in the specification.

STUMP EXTRACTORS—Francis M. Eagle, of North Manchester, Ind.: I do not claim any construction in which the movement of the stump is the same as that of the power.

But I do claim overcoming the resistance by the movement of a roller invariably connected with the stump, substantially as described, upon a track either rectilinear or curved, all parts of which, except the starting point of the roller, are exterior to the circle with the invariable connection for a radius and the point of attachment of the hook for a centre, the operation being substantially as described.

STOVES—Nelson Edwards, of Chittenden county, Vt.: I claim the application to a stove of an improved, combined hydro-atmospheric jet and gas chamber.

I also claim the stove-contained coiled smoke-pipe in its combination with the plurality of stove walls substantially as described.

SPRING BOTTOM FOR CHAIRS AND OTHER SEATS—Patrick Gallagher, of Pleasant Unity, Pa.: I claim making the bottoms of chairs, or other seats, of spring plate metal, so that, when laid loosely upon the frame, said plates shall be both a bottom and a spring, substantially as set forth.

PRINTING PRESS—S. R. Cotton, of Green Bay, Wis.: I claim operating the form bed, J, from the pressure cylinder B, by means of the cam or eccentric, M, provided with the pin, O, rack bar, D, provided with the projection, p, and roller, n, the pinions, E G, on the shaft, F, with or without the pinion, H, slide bar, L, and spring, s, and the rack bar, I, the whole being arranged to operate as and for the purpose set forth.

I also claim the toothed sector, x', which gears into the pinion, y, of roller, a', and is connected with the rack bar, D, by means of the slotted arm, t, on the rack bar, and the arm, w, of the sector, provided with the pin, o, the rod, c', attached to the arm, d', the pall, i', attached to the arm, d, and the ratchet, h', attached to the roller, g', the whole being arranged as fully shown and described, so that the inking device will be operated automatically from the pressure roller.

I further claim having the bearings, b b, of the pressure cylinder, attached to rods, d d, which are connected by tension nuts, e e, to straps, f, that encompass the eccentrics, g, of the shaft, h, for the purpose of readily raising, when necessary, the cylinder, B, and regulating its pressure.

[The object of this invention is to obtain a very simple and economical cylinder press, suitable for operation in a small way, as, for instance, job or country newspaper offices, and one that will work rapidly with but a small expenditure of power. The invention consists, 1st, In the peculiar arrangement of parts employed for transmitting motion to the form-bed and inking device from the pressure cylinder; 2d, In an equalizing device connected with the reciprocating form-bed, and so arranged that all "back lash" is prevented at the termination of its vibrations, and an easy, smooth and regular movement obtained; and 3d, In a peculiar means employed for adjusting and regulating the pressure cylinder.]

STEERING PROPELLER—H. E. Tessel, of Chicago, Ill.: I do not claim the invention of applying a screw propeller in such a manner that its position can be changed to make it operate as a rudder.

But I claim the arrangement and combination of the slotted frame, A, propeller, F, driving shaft, C, and chain wheel, i, substantially as and for the purpose shown and described.

[This invention consists in applying the propeller shaft in bearings carried by a horizontal circular frame which is capable of rotating to some extent around a vertical driving shaft, geared with the propeller shaft, and which is so geared with a steering apparatus that the propeller shaft may be set at any required angle to the centre line of the vessel, and the propeller thereby made to perform the duty of a rudder without interfering with its action as a propeller.]

SEEDING MACHINES—Joseph Fowler and F. M. Bacon, of Ripon, Wis.: We do not claim the board, J, nor the roller, G, for they have been previously used, and may be seen in our patented machine previously alluded to.

But we claim the reciprocating perforated slide, E, stationary perforated slide, H, and perforated roller, G, in connection with the inclined board, J, the whole being arranged to operate as and for the purpose set forth.

[This invention relates to an improvement on a seeding machine formerly patented by the same inventors, the letters patent being dated August 24, 1858. The present invention is an improvement in the seed-distributing device, whereby the seed may be more evenly distributed or planted than by the former machine.]

SHUTTLE BOXES FOR LOOMS—A. F. Gibboney, of Union Township, Mifflin county, Pa.: I claim the half swell, D, on the inner end of the fly, A, to be operated on by the picker, F, as set forth.

SASH FASTENER—Porter A. Gladwin, of Pawtucket, Mass.: I claim the employment of the perforated plate, D, with the notch spring, F, for fastening window sash in the manner substantially as described.

PROPELLER FOR BOATS—James Hamilton, of New York City: I do not claim a reciprocating propeller frame between the vessel, neither do I claim buckets hinged at their upper edge, nor movable stops against which the buckets rest while in action.

But I claim the arrangement of two sets of propeller buckets in a reciprocating frame, so set that they act in opposite directions to give head or stern way respectively, when said buckets are, combined with sliding stops, fitted and acting, as specified, to retain one set of buckets in a folded and inoperative position, while the other set is acting to move the vessel as set forth,

TYPOGRAPHER—Henry Harger, of Delhi, Iowa: I claim first, The employment or use of the bed piece, B, frames, D and C, and type frame formed of the plates, E E, arranged substantially as and for the purpose set forth.

2d, The particular means employed, as herein shown and described, for feeding the frame, C, and paper or wax to the type; to wit, the bent lever, G, connected to the hand lever, F, the ratchet, H, and cords or chains, o, attached to the frame, C.

3d, Regulating the feed movement of the frame, C, by having the types, h, made of varying hights or lengths, so as to give corresponding lengths of vibration to the lever, F, substantially as described.

[By this arrangement of means for actuating type, and feeding the paper thereto, printing directly from the type is much facilitated, or the invention is applicable either for printing on paper or for giving impressions on wax, so as to form molds or matrices for electrotyping and similar purposes.]

FURNACES FOR BURNING LIME—Thomas R. Hartell, of Philadelphia, Pa.: I do not claim, broadly, a reverberatory furnace, arranged to receive a movable platform or truck, containing the articles or material to be acted upon by the heat of the furnace, as such a device has heretofore been used in the manufacture of glass.

But I claim, as an improvement in reverberatory furnaces for burning lime, providing a recess in the side walls in which a corresponding projecting edge of the fire-proof traveling platform fits, in the manner described, for the purpose of cutting off all communication between the heated upper chamber and the cool lower chamber, at the same time presenting no obstruction to the forward movement of the truck and platform.

LOCK—Spencer Hiatt, of Indianapolis, Ind.: I claim first, The combination and arrangement of the tumblers, 1 2 3 4 5 6 7 and 8, and key bits, 9 10 11 12 13 14 15 and 16, with the lever, A, sliding yoke, Q, and lever arms, V and K, when constructed and arranged substantially as set forth.

Second, The combination of the comb spring, M, and slide, R, with the tumblers, 1 2 3 4 5 6 7 and 8, when constructed, arranged, and operated substantially as and for the purposes set forth.

BREECH-LOADING CANNON—John W. Hollensbury, of Alexandria, Va.: I claim a breech-loading cannon formed in two parts, and secured together by means of a frame, substantially as described.

Second, In combination with the two divisions of the cannon, as described, I claim the frame, D E F G, fitting closely up against the breech, A, and capable of being elevated or depressed, the whole constructed and operated substantially as and for the purpose set forth.

Third, In combination with the two divisions of the gun I also claim the band or circular wedge, W, constructed and operated substantially as described.

LADIES' HOOPED SKIRTS—John Holmes, of Boston, Mass.: I claim the net-work fabric described, having the number or size of its meshes reduced toward the top in such a manner as to throw the fullness in one direction or on one side, so that when the hoops are inserted it is self-sustaining, to produce the "bishop" or "bustle" form, and preserve that form to the bottom of the skirt, as set forth, without the use of lacings, springs, extra "bustles," or other contrivances.

[These skirts are formed of a net-work, between the meshes of which the hoops are passed; and in the manufacture, sufficient fullness is left in the back part to form a bustle when the hoops are placed in it. It is a neat and well-shaped skirt.]

METHOD OF ADJUSTING THE TRIPPER TO THE ESCAPEMENT LEVER OF TIME-KEEPERS—Edwid B. Horn, of Boston, Mass.: I do not claim a compensating scroll or coil, D, composed of two metals of variable expansive properties, and applied to a hair-spring balance.

But I claim the movable plate, F, or its equivalent, supported so as to be capable of turning on a pivot, or its equivalent, carried by the stand, the same being for the adjustment of the beat or the pin or tripper of the escapement lever, as specified.

INKSTAND—Thomas S. Hudson, of East Cambridge, Mass.: I do not claim an inkstand composed of a main ink reservoir and a cup or ink receiver, furnished with a tube, and connected with the main reservoir by a flexible or elastic diaphragm, as such is not new.

Nor do I claim in combination with the ink reservoir or cup, B, and its cover, D, mechanism substantially as described, whereby the act of elevating the cover off the cup, the latter shall be depressed so as to cause ink to flow from the reservoir upward into it, and by the act of depressing the cover toward the cup, the ink will be caused to flow back into the reservoir.

But I claim the arrangement of a vent hole, i, within the flexible or elastic diaphragm, C, and with respect to the ink receiver, B, essentially in manner and to operate as described, and for the purpose explained.

TOOL FOR SLOTTING CLOTHES PINS—John Humphrey, of Keene, N. H.: I claim arranging knives or cutters to widen or flare the outer ends of the slots in clothes pins simultaneously with the sawing thereof, by having portions of the plate of the saw removed, and the cutters secured to the disks or flanges on the arbor, and held thereby independent of the saw, as shown and described, by which arrangement a perfect and complete slot may be cut, at a single operation, and the cutters may be quickly and accurately adjusted to any required position, and be securely kept therein or be readily removed, when desired, as set forth.

PROPELLING AND STEERING APPARATUS—Samuel Huse and Samuel Huse, Jr., of Chicago, Ill.: We claim as an improvement in propellers, when hung within the rudder and operated by gears, E F G, as set forth is, receiving the end thrust of the propeller shaft upon the sleeve, I, on the post, B, arranged and operating in the manner substantially as described.

SPRING TACKLE BLOCK—Obed Hussey, of Baltimore, Md.: I am aware that springs have been interposed between blocks and the fixed or movable eye bolt or body to which they were attached; such an arrangement of a spring without the block is, obviously, an essentially different thing from my improved block with a spring within it.

Of course, I do not confine myself to any special form or arrangement of the strap and the block, or of either (as these may be indefinitely varied), so long as the block is constructed with a seat to yield to the force of sudden shocks, and thereby prevent the dangerous jerks which, as described, it is the object of my invention to prevent.

What I claim is, a block having a yielding seat, substantially as set forth.

PRESERVING FRUITS—John R. Jenkins, of Kingston, Pa.: I am aware that the mode of preserving such articles by incrusting them with a composition impervious to the air, and which will prevent their desiccation and decay, is not new; Robert Warington obtained, March 5, 1846, a patent in England for the use, in this manner, of many such compositions. I do not wish, therefore, to claim broadly this mode.

But I claim dusting the articles to be coated with any dry powder, such as plaster of Paris, or its equivalent, to prevent the coating from adhering to the articles coated, and permitting it to come off readily.

GAS RETORTS—William H. Laubach, of Philadelphia, Pa.: I do not desire to confine myself to the particular form of the retort illustrated, or to the exact shape of the plate, D, inasmuch as both may be considerably modified in shape without any deterioration of the result.

But I claim dividing the retort into an upper and a lower chamber by means of a movable plate, D, said plate being so constructed and so arranged in respect to flanches or projections in the retort, and being so weighted that the amount of vapor admitted into the communication between the two chambers shall be proportionate to the rapidity with which it is generated, and that the vapor shall pass from the lower chamber in a stream so attenuated and so exposed to red-hot surfaces as to insure its being converted into permanent gas on entering the upper chamber, as set forth.

CLOTHES' HORSE—Tristram S. Lewis, of Kendalls' Mills, Me.: The arrangement of the four spring catches is such that the spring, k, while operating to press the horse open, and to maintain it in an extended state when unfolded, will also operate to maintain all the catches in engagement with their respective slats. Therefore, when the posts, A B, are hinged together, and the four folding sets of slats are applied to them and arranged on them as described—

I claim the arrangement of the spring, k, and the two sets of spring catches, f g h i, in order that the said spring may perform at one and the same time the two functions, as specified.

FRUIT CANS—W. W. Lyman, of West Meriden, Conn.: I claim in combination with the groove for receiving and holding the packing and the flange, m, on the cover, fitting into said groove and against the packing, the sleeve, C, with its cam slots, and the studs on the neck of the can, for drawing the flange of the cover tight down on to the packing without crimping it, substantially in the manner specified.

CULTIVATORS—Howard Mann, of East Attleborough, Mass.: First, I claim the application of each wheel arbor to its wheel, and the frame, A, substantially as described, viz., so that the wheel may turn on the arbor, and the latter extend into slots, and have fastenings as explained, whereby not only the wheel may be adjustable with reference to the cutters, but the arbor and its screws and nuts may be employed to strengthen the frame, in manner as set forth.

Second, I also claim the described arrangement of each of the slots of the wheel arbor with respect to the scraper of the periphery of the wheel, whereby the wheel, at whatever altitude it may be placed, while its arbor is in the slots, will be at one uniform or proper scraping distance from the scraper.

Third, I also claim the application or arrangement of the slide bar of the cutter, G, so as to operate not only as a scraper to the wheel, but as a supporter of the cutter post or rod.

SEED PLANTERS—F. M. Marshall, of Seguin, Texas: I claim the arrangement of perforated plates, A' and B', beam, A, gage wheel, B, bull tongue plow, S, roller, F, crank, H, arm, D, and handles, R R, the whole being constructed for joint operation as set forth and described.

MACHINES FOR PICKING CORN—S. W. May, of Gatesburg, Ill.: I claim the bars, L, the elevators, F, the fingered belt, R, the frame, A, the crank with its pitman, O, or their mechanical equivalents, the whole being combined, arranged and operated, substantially as and for the purpose set forth.

LOCOMOTIVE AXLE BEARINGS—David Matthew, of Philadelphia, Pa.: I am well aware that it is common to use a crease in journal bearings for purposes in connection with lubrication, but they have no such effect nor construction as mine, and I do not wish to be mistaken as using a mere modification of such crease, or as claiming any such arrangement or device.

But I claim the peculiar construction of journal-box or bearing, in one piece, having a longitudinal slot or opening operating as and for the purpose substantially as set forth.

DOOR SPRING—T. J. Mayall, of Roxbury, Mass.; I claim, as a new article of manufacture, the described india-rubber torsion door spring, operating as described.

SHIRT STUD—Charles McIntire, of Newark, N. J.: I claim the latch and catch, constructed substantially in the manner and for the purpose set forth.

CORSETS—Anne S. McLean, of Williamsburg, N. Y.: I disclaim looped fabrics of any kind for the purpose of forming the shield or top of the pad next to the outer dress.

Neither do I claim the manufacture of eyelet hooks, as they are in common use.

But I claim providing the upper sections or pads of the corset, with cone-shaped flat steel, or their equivalent springs and spring supporting plate next the body, for the purpose of giving elasticity to the pads, which pads are held in their places by the weight of the corset.

IRON PAVEMENTS—Richd. Montgomery, of New York City: I claim a metallic pavement, consisting of a series of parallel arched corrugations, reaching or extending from the curbstone on one side of the street to the curbstone on the other side, substantially as shown and described.

I also claim casting or making the upper parts of the corrugations thicker than the lower parts in the manner and for the purpose set forth.

I also claim supporting or anchoring the pavement when it is cast in sections by a grooved central support, as shown and described.

I also claim the dovetailed recesses and projections, k, in combination with the projections, b c, for the purpose of holding the pavement in place.

DEVICE FOR TRANSMITTING ROTARY MOTION—Henry Morris, of West Philadelphia, Pa.: I claim the combination of the convolute gear, A, and convolute groove, b, with a sliding pinion or gear, C, substantially as and for the purposes shown and described.

[This invention consists in the combination of two beveled gears, one of which has its teeth arranged in convolute form, and the other of which, gearing with the first one, has its teeth concentric to its axis; the latter being fitted to slide on its shaft that it may, when geared with and driving or being driven by the first one, approach or recede from the axis of the same under the guidance of a convolute groove, which is formed between the convolute coils of teeth, and be thereby caused to receive from or impart to the first one a gradually increasing or diminishing velocity. The device may be applied to many purposes in machinery, but is more particulary intended to be applied to the spinning mule, the first gear being secured to what is known as the "scroll shaft" of the mule to drive the other one, which is attached to a shaft which drives the rollers, for the purpose of producing a gradual diminution of speed of the rollers before stopping them after the mule carrier has moved out a certain distance from the rollers, and thereby prevent the jerk on the yarn, which is caused by stopping the rollers suddenly.]

BLIND FASTENER—John Murphy, of Boston, Mass.: I do not claim the window blind or shutter fastener shown and described in the United States patent No. 4,633.

But I claim the arrangement of the spring catch on the pintle step shank, and with respect to the notched pintle, as described.

I also claim combining with the catch, and its case, a movable projection, or cover, applied so as to be capable of being moved on and off the pintle head, and to carry the thumb projection or stud of the catch, substantially in manner and for the purpose as specified.

LATHE FOT TURNING MASTS, &c.—P. H. Niles, of Boston, Mass.: What I claim as an improvement in machines for turning masts and spars is the revolving traversing cutters, in combination with the dogs or their equivalents for supporting the stick of timber, operating in the manner described for the purpose set forth.

Second, I claim raising the dogs automatically as the cutters approach them, for the purpose set forth.

Third, I claim the method of controlling the position of the cutters by means of the combination of the slotted wheels, D and L, the gears, P Q and R, and the pattern, W, and their connections, M M', N O T V, operating in the manner substantially as set forth.

CONSTRUCTION OF IRON RAILING—James Nuttall, of New Orleans, La.: I do not claim, broadly, dovetailed connections, as such is not the scope of my invention. But I claim the combination of bent sheet metal rails, with grooves in the panels receiving the edges of the rail, and giving an internal and external bearing to the rail, substantially as set forth.

LATHE MACHINE—Jacob Pefley, of Bainbridge, Ind.: I claim the combination of the reciprocating knife, K, the bolt supports or bars, k, and the stationary bar or bed, Y, arranged to operate substantially as and for the purpose set forth.

I also claim the shaft, H, provided with the bent rods, h, and connected or arranged with the rock shaft, V, of the bars, k, through the medium of the levers, Q R, bars, S R', and the arm, U, substantially as and for the purpose set forth.

I further claim, in connection with the knife, K, bars k k, and bed, Y, the registering device operated from the rock shaft, V, through the medium of the pawl, i, connected with the lever, C, rod, k', and bent lever, i', so as to be thrown in contact with the ratchet, A', by the bolt, a, as set forth.

[A reciprocating knife or cutter is arranged with a stationary bed and reciprocating supports for sustaining the bolt, and there is also a registering device applied to the machine, and used in connection with a bell. These are so placed in conjunction with each other that a perfectly self-feeding or automatic machine is obtained, one that works expeditiously and well.]

CORES FOR MOLDING PLASTIC SUBSTANCES—James Pilgrim, of New Britain, Conn.: It is obvious that my improved core may be made of any desired form and size, and of various materials, without departing from the nature of my invention, though for its formation I have found the india rubber cloth, in practice, most desirable.

It will also be observed that my improvement is particularly applicable and advantageous in the construction of composition cisterns and other formations, where the orifice through which the core has to be extracted is much smaller than the cavity formed, since a core thus constructed may be entirely collapsed and drawn through a very small hole.

I do not, therefore, desire to limit myself to any particular form of core or material of the same, or to any exact arrangement of the inflating and exhaust devices.

But I claim constructing cores for molding in plastic clay, cement, or other like substances, of india rubber, or equivalent material, so that they be inflated and collapsed, substantially as described.

© 1859 SCIENTIFIC AMRICAN, INC.

PESTLES FOR CLEANING CLOTHES—Ezra Pollard, of Albany, N. Y., assignor to himself and B W. Seeley of New York City: I do not claim a pestle formed of a series of parallel and solid cylindrical projections fitted in a head or stock, for that, or its equivalent, has been previously used.

But I claim as an improved article of manufacture, a clothes pounder or pestle composed of a a stock, A, handle, C, tubes, D, and openings, a, as shown and described.

[The subject of this patent is a clothes pestle or pounder, constructed of a series of parallel tubes fitted in a suitable head or stock, and having apertures made through them at their upper parts, thus rendering it a very effective instrument for washing clothes.]

BURNISHING ATTACHMENT FOR LATHES—James S. Ray, of East Haddam, Conn.: I claim the arrangement and combination of the plate, E, plate, F, spring, k, mandrel, C, and tool, G, as and for the purposes shown and described.

[The object of this invention is to facilitate the manipulation of the burnishing tool to such a degree that apprentices, females, and comparatively inexperienced persons, may perform the desired work equally as well as the experienced workmen now required. The invention is applicable to all burnishing that is performed with the aid of a lathe—such as the burnishing of metal buttons, coffin screw-heads, &c.]

STEERING APPARATUS—Jesse Reed, of Marshfield, Mass.: I claim, first, The duplex screw shaft, E, in combination with the nuts, G, and guide rods, H, the rods being each permanently connected with one of the nuts, and passed through the lug, d2, on the other nut, and operating in the manner substantially as specified.

Second, I claim in combination with the above, connecting the nut, G, to the rudder-head by means of the arm, I, bulb, K, and rod, b, operating substantially as described.

TRACE FASTENINGS—Nil J. Reynolds, of Webster, N. Y.: I do not claim the face plate, A, or bolt and spiral spring, E, as new.

But I claim first, the formation of the eye, d, which receives the tongue, E, for the purpose described and set forth.

Second, I claim the tongue, E, in combination with the tube, c, spiral spring and bolt, E, which fastens tongue, E, in the eye, d, as described.

RAILROAD CAR BRAKES—J. W. Rice, of Springfield, Mass.: I claim, first, The suspension bar, H, crotch bolt, J, and nut, j, when arranged and operating in the manner and for the purposes substantially as described.

Second, I claim the continuous rod, V, and loose pulley, K, in combination with the suspension bar, H, and crotchet bolt, I, and nut, J, when arranged and operating substantially as and for the purposes set forth.

Third, I claim the loose collars, P P, on the standard, q, when applied in the manner and for the purposes substantially as set forth.

BEDSTEAD FASTENING—Oliver Robinson, of Rochester, N. Y.: I claim the combination and arrangement of the hooked locking bolt, A, with the circular wrench and eccentric, B, constructed as described, for holding the bolt by means of the lip, i, in the proper position for entering the post and tightening the connection made with the pin, f, or its equivalent, substantially as and for the purpose set forth.

APPARATUS FOR WALKING ON THE WATER—Henry R. Rowlands, of Boston, Mass.: I claim the construction and use of the apparatus by the arrangement of the metal floats, o o, the metal ballast boards, m m, and the wooden stanchions, H H, in a manner substantially as and for the purpose described.

DREDGING MACHINE—James Stewart, of New London, Ct.: I claim the arrangement of the three series of dredging buckets in the same dredging machine, substantially as described and shown, for the purpose of excavating a channel in the earth throughout the entire width of the boat.

I claim arranging the windlass barrels which raise the dredging apparatus out of the water, on the same shaft that operated the dredging chains, so that they may be locked to the shaft to raise the dredging apparatus without stopping the chains of dredging buckets, substantially as described.

BURRING MACHINE—O. W. Stow, of Southington, Ct.: I do not claim the rollers, G H, nor the manner of adjusting the upper rollers H, nor do I claim the gage I, in itself considered, nor the manner of adjusting the same on the lower roller, G, by the screw rod, J, for these parts are well known and have all been previously used.

But I claim the arrangement and combination of the spring, K, gage, I, and rollers, G H, substantially as and for the purpose shown and described.

[The object of this invention is to prevent the difficulty attending the wear of the journal of the lower roller shaft, and the consequent separation of the lower roller from the gage, whereby the latter is frequently rendered useless, or prevented from performing its proper functions. It consists in a novel manner of applying the gage to the implement, whereby the gage is permitted to adjust itself with the lower roller, and compensate for all wear of the journal of the lower roller shaft.]

MANUFACTURE OF STARCH—S. T. Stratton, of Philadelphia, Pa.: I disclaim the use of cold alkalies or alkaline liquors for steeping the material.

What I claim is, steeping the material from which the starch is extracted, either whole or crushed, in an alkaline or caustic alkaline liquor of a suitable strength and artificially beaten to a temperature of from 70° to 130° Fah., as specified.

WASHING MACHINE—G. W. Swigert, of Monmouth, Ill.: I claim as an improved article of manufacture, a washing machine provided with a cylinder of brushes C, a concave, J, supported on spring, d, guard, k, attached to rod, e, pounders, L, tappet drum, M, and otherwise constructed as shown and described.

[In this invention, a rotating brush, elastic concave and guard are employed placed in a suitable box or case, and so arranged that clothes may be washed in an expeditious and perfect manner without injury or breaking any buttons that may be attached to them.]

CLOSET FOR SEWING MACHINES—William P. Uhlinger, of Philadelphia, Pa.: I am aware that sewing machine stands have already been made with a view to hide the machine from sight, when standing idle, which end is, in those, accomplished by means of a separate covering or cap, the platform of the machine being stationary; but this I do not claim. I think, however, it must be evident from the description that parts of my improved sewing machine closet may be modified, or equivalents substituted, without imparing my invention; as, for instance, an arrangement of levers, or of gearing, may be employed in place of the cords or chains and pulleys described, all of these being well known mechanical devices, and, in this instance, giving the same result; or the platform, G, may, instead of sliding bodily up and down, be made to turn on pivots; I therefore do not desire to confine myself to the described construction or combination of the various parts in every minutia.

But I claim combining the sewing machine platform, G, with the lid, B, of the closet, that the opening and shutting of said lid shall operate the platform, G, substantially in the manner and for the purpose set forth.

RAILROAD CAR SEATS AND COUCHES—Nathan Thompson, Jr., of Brooklyn, N. Y.: I claim, first, The combination of longitudinal seats, with a raised platform and berths, or reclining places beneath the seats and platform, substantially in the manner described.

2d, In combination with berths or reclining places beneath a seat and a raised platform serving as a footstool to such seat, I claim a back to that seat capable of being moved, or of change of place, substantially as specified, so that it may serve, at will, as a back or as a couch above the main seat.

3d, I claim making the top of the platform, or footplace, pertaining to the main tier of seats movable, substantially in the manner and for the purposes specified.

4th, I claim arranging within a railroad car longitudinal couches along or upon the floor, and other couches or seats above these, with backs, which may be converted into couches and passage ways, or a passage way, from which free access may be had to all the seats and couches, the arrangement of the whole being substantially such as set forth.

5th, I claim combining with longitudinal passage ways, or a longitudinal passage way, longitudinal seats when those seats have backs so constructed, substantially as specified, that they may be converted into couches, or when those seats are free to slide transversely substantially in the manner described, the combination, as a whole, being as set forth.

Sixth, I claim adjustable or movable end seats, substantially such as described, and serving, if necessary, as steps, in combination with longitudinal car seats, having backs capable of conversion into couches, substantially in the manner specified.

APPARATUS FOR GENERATING ILLUMINATING GAS—Charles A. Tyler, of Washington, D. C.: I claim, first, The peculiar arrangement and combination of the retort for generating the hydrogen gas with the main retort for the generation of the illuminating gas, substantially as set forth.

2d, Elongating and contracting the rear end of the main retort in the manner and for the purposes substantially as set forth.

3d, Connecting the rear end of the hydrogen retort with the contracted end of the main retort in the manner and for the purposes substantially as set forth.

BURNERS FOR VAPOR LAMPS—Sigourney Wales, of Boston, Mass.: I claim, when the wick is supported on and around an inner wick tube and within an outer wick tube, and the jet-cap is made separate from and so as to screw or fit on the outer wick tube as described, the application of a rod, F, to the movable jet-cap, D, and the inner wick tube, E, in such manner as to be fastened to the cap, D, and extend into and fit the bore of the tube, E, so as not only to enable the jet-cap to be raised and supported above the wick in manner to allow such wick to be inflamed and the flame thereof to heat the said jet-cap and rod, but to serve as a means of conducting heat from the jet-cap into the inner tube, by which such heat may be conducted into the wick in order to aid in vaporizing the liquid contents thereof.

MAKING EDGE TOOLS—William White, of Newark, N. J.: I am aware that ingots of steel and iron are now formed by pouring the melted liquid into molds; I do not claim for the purpose of forming the ingot; I do not claim the manufacture of iron or steel, nor the remelting of the same, either new or old.

But I claim the use of wrought iron and steel separately or combined, while in a melted or liquid state, for the purpose of forming into shape axes and other articles, without the process of forging, welding or swaging, by the use of a mold, the cavity of which is the shape or form of the articles desired, as set forth in my specification.

LIFE-PRESERVING TRUNK—Oliver Evans Woods, of Philadelphia, Pa.: I do not confine myself to the precise form of valise represented in my drawings, but the same construction may be applied with equal advantage to all kinds of trunks; the stays may be placed upon the inside or the exterior of the valise or trunk as may be found most desirable.

I claim, as an improved article of manufacture, a valise or trunk, made substantially as shown and described.

[This valise, trunk, hat-box or other similar article used by travellers for carrying clothes, is constructed out of three separate frames, which are connected by a flexible waterproof covering, the middle frame being provided with pivoted stays, so that the valise is expanded when these stays are turned on their pivots into an upright position; but when the stays are turned down, so as to fall in the same plane with the middle frame, to which they are attached, the valise can be compressed like a pair of bellows.]

THE CUTTING APPARATUS OF HARVESTERS—William A. Wood, of Hoosick Falls, N. Y.: I claim the manner described of constructing the guards and uniting them to the finger bar, as set forth.

DOOR FASTENER—Gilbert Yates, of West Dresden, N. Y.: I am aware that there is quite a number of fasteners already patented, all of which I disclaim.

But I claim a door fastener constructed of the pieces, A A' A'', bolt, B, keeper, C, and slot, D, operating as set forth.

TURNBUCKLE FOR WINDOW BLINDS—Joseph L. Chapman, (assignor to himself and George Chapman,) of Philadelphia, Pa.: I claim the turnbuckle, E, and sliding collar, D, provided with the flanch, b, and the spring, E, placed on the spindle or arbor, A, the whole being arranged to operate substantially as and for the purpose set forth.

I also claim, in combination with the above named parts, the washer, C, placed on the arbor, A, for the purpose set forth.

[The object of this invention is to obtain a fastening that will secure window shutters or blinds in an open state, without allowing them to play or rattle, and at the same time accommodate itself to shutters or blinds of different thicknesses, and one also that will not be liable to work loose in a building by the action of the shutter or blind upon it when thrown open.]

RAILROAD CAR SEATS—George L. Dulaney, (assignor to himself and Solomon R. Moore,) of Mount Jackson, Va.: I claim the combination and arrangement of the movable seat bottoms, C, hinged folding cushions, G, sliding slat blind frames, H', and hinged cushioned frames, 1, and cushioned flaps, K L, on the backs, E, of the seats and slides or panels, M.

[The nature of this invention consists in so constructing the seats and securing them to the floor of the car as to enable them to answer all the purposes, and have all the advantages of the ordinary reversible car seat and yet admit of their being turned parallel with sides of the car, and their several parts altered and so adopted to each other as to convert them into comfortable double sleeping couches, one above the other, with suitable partition blinds between the lower ones, and entirely enclosed from outside observation, and thus insure their occupants the privacy, ease and facilities for sleep that are obtainable from the ordinarily arranged berths for steamboats.]

EXPANDING BIT—Harley Stone, (assignor to Paul P. Todd,) of Blackstone, Mass.: I claim the mode and application of the slide cutter, B, the slits, C and D, the bolt, E, and the graduated scale, F f, and constructed and operating as set forth and described.

METHOD OF BLASTING OR REMOVING SUBMARINE BODIES—Samuel Eakins, assignor to himself and U. S. Wickersham, of Philadelphia, Pa: I claim the combination with a piece of ordnance to be employed under water for the removal of rocks or other bodies, by the operation described of a series of adjustable legs, applied and operating substantially as and for the purpose specified.

[In this method of blasting or removing submarine bodies, a very heavy cannon, loaded with powder and ball, is sunk with its muzzle in contact with, or as close as possible to the face of the rock or other body to be removed, and fired by a galvanic battery, to project the ball against the rock. The weight of the column of water above the cannon, added to the weight of the cannon itself, prevents recoil, and causes the ball to be projected with immense force. The cannon has adjustable legs, which support it or attach it to the body to be removed, and enable it to be set at such angle as might be desirable to split off a ledge of rock. When the cannon has been fired, it is raised by chain tackles attached to it. Experiments show this to be a very effective method of blasting.]

STACKING AGRICULTURAL PRODUCTS—Carlos W. Glover, of Farm Ridge, Ill., assignor to himself, Bronson Murray and J. Van Doren, of La Salle county, Ill.: I claim making a stack out of two or three, four or more lengths of straw or other material, that overlap or break joint with each other, and which are laid with their seed ends pointing to a common center, and commencing at the apex and ending at the base, and drawn together and secured substantially as represented, using, as a foundation to build upon, an apron or the binding cords or chains as set forth.

STACKING AGRICULTURAL PRODUCTS—John Van Doren, of Farm Ridge, Ill., assignor to himself, Bronson Murray and Carlos W. Glover, of La Salle county, Ill.: I claim the so placing of two, three or more layers of stalks or straws in a box or former is that they shall break joint with each other, beginning at the apex and so continuing until one half of the stack is formed, and then reversing the operation and laying them from the base to the apex for the other half of the stack, so that, when bound up, they shall form a stack shingled on its outside to protect the interior, substantially as described and represented.

CAST IRON MERCURY BOTTLE—Moses Wrangle, assignor to Hunter, Keller & Co., of New York City: I claim molding iron mercury bottles, with concave bottoms, by means of the patterns, substantially as described.

RE-ISSUES.

SHEARS—Joseph A. Braden, of La Grange, Ga. Patented Sept. 21, 1858: I claim the construction of scissors or shears, with their blades in separate pieces from the handles, and fitted to the handles with stems and sockets.

[We noticed this invention on page 26 of the present volume of the SCI. AM., and the same description equally applies to the re-issued patent.]

LOOMS FOR WEAVING FIGURED FABRICS—Geo. Crompton, of Worcester, Mass. Patented Nov. 11, 1854: I claim, combining with hook jacks which are connected with the harness, and with the mechanism for operating them to open the shed, a pattern chain or cylinder constructed with two or more patterns, and operated so that either of the patterns can be made to act on the hook jacks to place them in the required position to be operated upon by the mechanism for operating the shed.

I also claim, in combination with a pattern chain, arranged with two or more patterns in the direction of its length, the mechanism for changing the movements of the chain to effect the changing of the pattern.

I also claim placing two or more patterns upon the rods of a pattern chain side by side, and operating them in succession by vibrating the chain laterally.

I also claim pivoting the lifting and depressing rods at one end, the other being made adjustable.

And I also claim moving the rods or jacks out of contact with the rollers on the pattern chain before the chain, the chain is moved by means of what are termed the vibrating fingers, or the equivalents thereof.

STEAM STOVE—J. L. Sutton, of Norristown, Pa. Patented July 20, 1858: I claim combining two or more concentric chambers, connected together and arranged in respect to each other, with a boiler attached to an ordinary stove, for the purpose specified.

MACHINERY FOR CUTTING SCREWS—H. A. Harvey, assignee (through mesne-assignment) of Thomas W. Harvey, late of New York City. Patented May 30, 1846: I claim the combination and arrangement of two inclined rollers, one or both rotating, and placed at a sufficient distance apart to permit the shanks of the blanks to hang therein freely suspended by their heads, and for the purpose of arranging the blanks (when presented in a promiscuous mass) all in a row, with their heads up, and causing the row to travel to the lower end, and to be delivered one by one.

2d, Combining with the delivery end of the inclined rollers, or equivalent ways, for supplying the blanks in order, a delivery and check slide and a receiving and conducting tube, or equivalent therefore, to receive the blanks from the row, deliver them one by one, and conduct them to the place where they are required for after operations, and at the periods required.

3d, Combining with the receiving and conducting tube, a transferer, or equivalent therefore, to receive the blanks from the conductor and transfer them to the mandrel or place where they are to be subjected to the cutting action.

4th, Combining with the mandrel or spindle, and with suitable means for holding the screw blanks in line, a sliding twin screw and spring, or equivalent therefore.

5th, Governing the motions of the chaser towards and from the axis of the blank, by combining the chaser with a carriage and sway bar moved by a cam, and also connecting one end of the sway bar with an adjusting slide, when this is combined with a chaser, or chaser head, whereby the amount of taper to be given to the screw can be regulated at pleasure.

6th, Changing the directions of the various cam grooves by means of sliding switches, operated by sliding rods within the hollow cam shafts, and shifted by an index cam, by which the various changes of the motions of the machines are effected.

And, finally, Making the cam which operated the sway bar adjustable on its shaft, for the purpose of adjusting the motions of the chaser to the length of the blank, to insure the proper formation of the point of the screw.

GAS BURNERS—J. R. Foster, of Boston, Mass., assignee of A. H. Wood. Patented Sept. 21, 1858: I claim, first, The flame spreaders, consisting of the ring pieces, extending outwardly from the gas orifice.

2d, I claim the heaters, combined with the jet gas burners.

3d, I claim, combining with the jet gas burner, a draft cone, the top of which terminates at or near the level of the gas orifice.

INVENTIONS EXAMINED at the Patent Office, and advice given as to the patentability of inventions, before the expense of an application is incurred. This service is carefully performed by Editors of this Journal, through their Branch Office at Washington, for the small fee of $5. A sketch and description of the invention only are wanted to enable them to make the examination. Address MUNN & COMPANY,

No. 128 Fulton street, New York.

Sergeant's Improved Governor.

This governor is suitable for marine or other engines, and consists of a smaller steam engine which works independently of the engine whose speed is to be governed, and which is so applied as to drive certain mechanism that offers an unvarying resistance to its motion. The small engine is also so combined with mechanism driven by the engine to be governed, and is in combination with the whole of this mechanism, that is so applied to a regulating valve which controls the supply of steam to the large engine, that any variation in the load of that engine, and consequent tendency to an increase or diminution of its velocity, as compared with the velocity of the smaller engine, causes the opening of the regulating valve to be diminished or increased in a proper degree to overcome such tendency, and causes the velocity of the large engine to be always, notwithstanding the greatest variation in the load upon it, in exact proportion to that of the smaller engine, which latter velocity can be controlled without any difficulty. The inventor is Henry C. Sergeant, of Columbus, Ohio, who has procured patents in foreign countries. The patent for the United States was granted last week.

Hugh Miller's Monument.

The foundation stone of the monument to Hugh Miller was laid at Cromarty, the birthplace of the eminent geologist and author, on the 5th ult. The monument will consist of a pillar 50 feet high, surmounted by a statue of Mr. Miller; the base is to be of old red sandstone taken from the quarry which was the first scene of Miller's geological researches. The inscription will be engraved on the base: "In commemoration of the genius and the literary and scientific eminence of Hugh Miller, this monument is erected by his countrymen. He was born at Cromarty, 10th of October, 1802, and died 24th December 1856."

Wooden Water Tubes.

The *Rural New Yorker* states that a piece of wooden tubing laid down in 1816, on the farm of E. Morse, of Eaton, N. Y., was recently lifted, and was nearly as fresh as when it was first taken from the forest. It was placed ten feet deep in the soil at the lowest point, and gradually approached the surface. The wood was pine; the bore two inches, and the whole tube four inches in diameter. This shows that wooden tubes in some situations are more durable than those of iron.

Literary Notices.

ARABIAN DAYS' ENTERTAINMENTS. Translated from the German by Herbert Pelham Curtis. Phillips, Sampson & Co., Boston; Sheldon, Blakeman & Co., New York. This is indeed a pleasant gift book, for this present-making season, and although not equal to the great original, (as, indeed, what could be,) it is still the best collection of pleasant stories for children of all ages that we have seen for a long time. Its tone is genial, and the illustrations by Hoppin are lively and graphic.

THE SOCIABLE: OR, ONE THOUSAND AND ONE HOME AMUSEMENTS. Illustrated with engravings and diagrams. Dick & Fitzgerald, Ann street, New York. It is a genial substitute for the theatre, the ball room, and similar places of amusement. Every man who is surrounded by a home circle of some magnitude, or who is accustomed to share in the innocent social enjoyments of others, must have actually felt the want of choice and variety exhibited in the games and other parlor performances usually gotten up to while away, in a pleasant manner, a long winter evening.

THE COSMOPOLITAN ART JOURNAL. December, 1858. 548 Broadway, New York. This splendid quarterly contains much excellent matter from the pens of distinguished *litterateurs*, and the mechanical execution is perfect. For the engravings we cannot say much, and think that fewer and more perfect ones would be an improvement that would be appreciated. The object of the journal—the cultivation of art in America—is noble, and should be encouraged in all quarters.

THE ATLANTIC MONTHLY, for January, contains the following table of rich literary viands:—"Olympus and Osgard," "Juanita," "Left Behind," "Coffee and Tea," "Men of the Sea," "Chicadee," "The Illustrious Obscure," "The New Life of Dante," "At Sea," "Bulls and Bears," "The Professor at the Breakfast Table," "The Minister's Wooing," "White's Shakespeare." Publishers: Phillips, Sampson & Co., Boston

THE BUILDER. Wiley & Halsted, New York. This excellent periodical has some good engravings illustrative of architectural and decorative improvements in Europe, and much information that no person having taste for the progress of art should be without.

GRAHAM'S HANDBOOK OF AMERICAN PHONOGRAPHY. Andrew J. Graham, author and publisher, 348 Broadway, New York. To all who wish to attain a knowledge of the art of phonography, this book will be a valuable companion, and the already proficient will find in it many hints by which they may profit in reporting. It is, we think, a successful attempt to systematize phonography and place it beyond the chance of future change, so that any person acquiring it now will not have to be continually altering, correcting and unlearning what he has already acquired. This book will, we have no doubt, be largely sold to the flying artillery of the press (reporters), who will thank Mr. Graham for its production and the lessons it teaches. The author should, however, have given more credit to Mr. Isaac Pitman, the inventor of the art.

© 1859 SCIENTIFIC AMRICAN, INC.

New Inventions.

Printing on Glass.

Two weeks since on page 129 of the present volume of the SCIENTIFIC AMERICAN, we published an extract in relation to printing on glass, and we called upon the inventor of this process to report himself and exhibit some specimens of his skill. He has done so; the real *Simon Pure* is Mr. Baxter, No. 111 Fulton st., New York, the ornamental printer and publisher of colored prints. He showed us specimens of colored printing on both flat and curved glass surfaces. Flowers and letters are printed with equal facility, but the invention is not considered by its author to possess much utility.

New Prairie Plow.

This being about the time when agriculturists and dealers are laying in their stock of implements, we illustrate the prairie plow invented by David Cockley, of Lancaster, Pa., and patented by him Sept. 21, 1858.

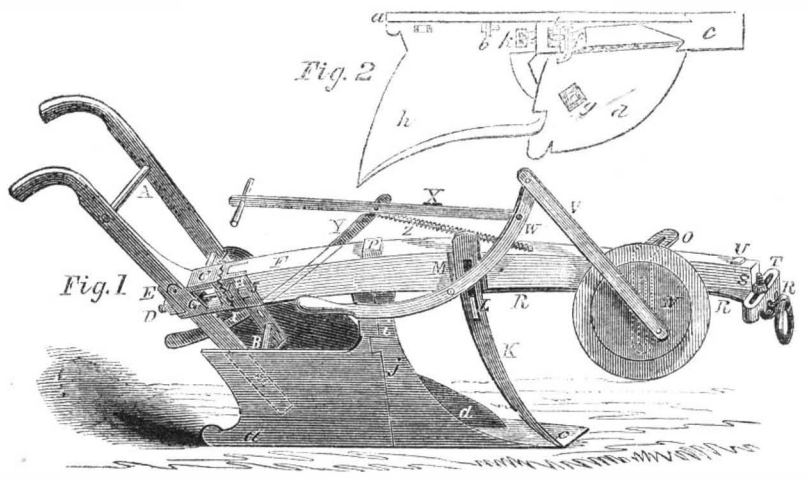
Fig. 1 shows the plow with its improvements, and Fig. 2 is an underside view of the same. A are the handles of the plow connected by a brace, B, by which they are kept in their position. C is part of the regulator, which is attached to the handles, A, and through which a joint bolt, D, passes. The head of the bolt, D, is in the other or beam part of the regulator, C (the regulator being in two divisions), and operates in a horizontal slot, H, which allows the beam to be moved or adjusted to the right or left when required, and by this adjustment of the beam, F, the plow can be changed for the use of two or three horses abreast, or two or four horses in line.

The joint, I, of the regulator, C, is corrugated in grooves fitted into each other, formed in a proper radius, so as to correspond with the upward, downward, or side adjustment of the beam, F. The beam end of the regulator, C, is fastened to the beam by a bolt, J. K is an adjustable cutter, which is set at an angle, with its curved front, and is adjusted up or down at the side of the beam upon a screw bolt in the slot, L. The cutter is held and braced in its position by a grooved plate, M, attached to the side of the beam. N is the wheel, with a cutter attached to the outer periphery, for the purpose of cutting sod, roots, briers, or running vines, and assists in keeping the plow clean and free from choking, and marks the width as furrow and lines with the land side of the plow, and which by its rolling motion cuts the sod and relieves the draught of the horses. It is attached to the beam by a double slotted plate, O, that allows the wheel to be raised or lowered or set in or out of the land. The main bolt, P, that holds the moldboard passes through the one end of the draw-rod, R, which extends to the front end of beam. F, where it is firmly held by an eye-bolt and nut, S, operating in a slotted plate, T. The plate, T, is held to beam firmly by two projections, and a bolt, U, and has grooves underneath to change the positions of the draw-rod.

V is a connecting rod attached to wheel, N, to operate the cleaner or knife, W, and the combination of these devices, V N W, prevents the plow from choking, and is self-acting. When the wheel operates, the cleaner, W, must be disconnected from and work independent of the upper lever, X. By detaching the connecting rod, V, from the knife, W, and wheel, N, the device is then changed to a hand or foot cleaner, by the plowman drawing the upper lever, X, towards him, or pressing his foot upon the end of lower lever, Y, which operates the cleaner, W, while the spiral spring, Z, (attached to lever, Y, and beam, F) draws the cleaner, W, back to its place. The curved shape of the cleaner, W, and the position of it as attached to the beam, F, gives the edge of the cleaner a forward and downward motion, and thus throws the stuff down that accumulates and chokes up the plow, so that the furrow slice will take hold of the stuff, and turn the furrow.

We will now describe Fig. 2. *a* is the sole or heel of the plow, which is slid into the landside, and fastened by a dovetail wedge, *b*. The point, *c*, and share, *d*, are made to reverse, which makes them self-sharpening,

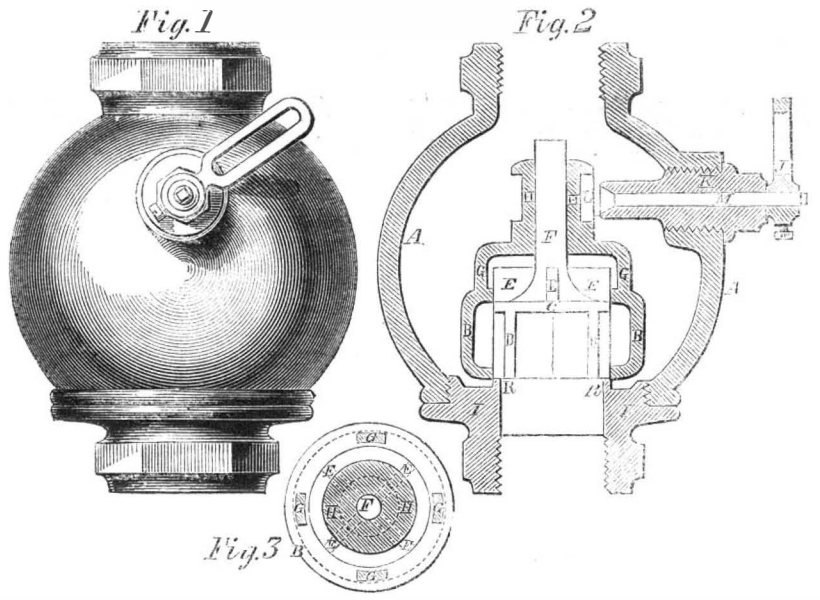
COCKLEY'S PRAIRIE PLOW.



plate, *l*, underneath. This screw bolt, *k*, is made with a square head, which is fitted into a corresponding groove in the bottom of moldboard or post, and the back part of plate, *l*, rests upon two lugs, one upon the landside, and the other upon the moldboard. On the the forward end of plate, *l*, is a lip which drops into the groove, *f*, in the point, *c*, and by screwing down the nut on to the plate, *l*, all the pieces of the plow are drawn and held tightly together. The advantage o fastening the pieces together by one short bolt is to prevent holes being made through the cast iron moldboard, so as to allow the moldboard to be chilled on its whole surface, thus making it susceptible of a higher polish, and consequently of lighter draught and durability.

Mr. Cockley has made arrangements to manufacture his valuable plow in Lancaster, Pa., where communications can be addressed.

IMPROVED GOVERNOR VALVE.



This invention was noticed on page 11, of the present volume of the SCIENTIFIC AMERICAN; and in order that its construction and advantages may be more fully understood, we present illustrations of it.

Fig. 1 is a perspective view of the exterior, Fig. 2 is a vertical central section, and Fig. 3 is a horizontal section of the same.

The exterior is of metal, and made in two parts, A A and I I. The steam pipe connecting the engine with the boiler should be screwed into the top and bottom of the governor, or attached by flanges and bolts. The interior of I is bored out to receive the lower ends of the wings, D D, which are fitted tight into I, and the shoulders on D D, rest on a ring or projection, R R, upon the upper side of I, supporting the winged disk, C. The ring, R, wings, D and E, and disk, C, are all turned on the same diameter. B B is the winged hollow cylindrical valve, and H H is a hollow spool-shaped stem connected to the same by arms, G. The cylinder, B, is fitted to move loosely up and down over the periphery of the wings, D and E, disk, C, and ring, R; it being suspended by the arms, G, and spool, H, on an eccentric, L, the spool being arranged to move up and down over the stem, F, when operated by the eccentric, L, of the rocking shaft, M, which carries the slotted link, J. By depressing the link, J, the eccentric will raise the cylinder, B B, and cause the steam openings to be made at the same time, one above the ring, R R, and one above the disk, C. The eccentric, L, and stem, M, is formed of one piece of metal. The stem is made to turn freely in the stuffing-box, K, and it forms a conical joint at the inner end of the stuffing-box, K, the two being ground together, forming a steam joint and requiring no packing.

From the foregoing description it will be evident that the valve, B, never rests down upon part I, and that it has no seat at top, it being held suspended by the eccentric, L, which is controlled by the governor, whose connection, by the eccentric, with the valve is such that it never causes the valve to descend lower than is represented in Fig. 2. This suspending the valve avoids loss of power, and also insures an insinuation of sufficient steam into the valve to keep up a perfect lubrication of it, and thus avoid friction in case of expansion of the metal of the piston and valve; and it also has the advantage that it can be operated, although the governor balls descend with a regular and uniform motion with a quick speed when the balls first begin to dray, and with a gradually decreasing speed as the balls continue their descent, and with a continually increasing speed as the balls rise. This having the valve open to a greater extent with the same length of movement of the eccentric at the commencement of the falling of the balls than it does in a like length of movement of the eccentric in the continued descent of the balls, is essential, in order to meet a nearly full head of steam with the check given to the engine by the application of work to it.

This most excellent valve is the invention of S. B. McCray, of Grand Rapids, Mich., and a patent was granted to him September 7th, 1858. He will be happy to furnish any further particulars upon being addressed as above.

Method of Treating Madder.

J. Wright, of London, Eng., has recently invented a new process of treating madder for printing and dyeing. He takes madder in the ordinary raw state, and mixes it with water, or bran water, in the proportion of about one (by weight) of madder to about five of water. After allowing it to steep for a little time he puts the mass into a coarse calico bag, and subjects it to pressure in an ordinary press, receiving the expressed liquor into a vessel, which after standing for some time, forms a jelly, and afterwards separates into a solid and liquid form. He then washes thoroughly the resulting coloring with clear water, and strains it off. This, upon being reduced to a proper consistency with gum or mucilage in the usual manner, is ready to dye or print with. Instead of treating the jelly in the last described manner with cold water, it may be treated with dilute sulphuric acid, or any vegetable substance containing an acid, or even with common salt. Afterwards it must be thoroughly washed, so as to remove all trace of the acid, then strained, and pressed so as to get rid of the water. Upon being reduced to the proper consistency, as before, it is ready to dye or print with, or the water may be all evaporated, and a dry powder formed. He then takes the refuse madder left from the last operation, and treats it in a similar manner, that is, obtaining a jelly extract, using, however, less water than in the previous operation. Finally, he mixes the refuse madder remaining after these two operations, with warm water, and after allowing it to stand for a short while, boils it; a precipitate is thus formed, which, after running off the clear supernatant water, he treats with caustic potash, then washes well and strains. He precipitates the coloring matter from the mass of water by means of sulphuric acid after boiling; and care should be taken to wash out of the precipitate every trace of the acid. It may be advisable in some cases to neutralize it by means of an alkali. The residuum or precipitate thus obtained may be added to the products of coloring matter obtained from the first or second described operations. Instead of treating the refuse madder in the way described, it may be converted into garancine in the usual manner. Again, when he wishes to obtain a crimson, or darker shade of red color, he takes the product resulting from either of the two first-mentioned operations, and converts it into garancine in the usual manner. Furthermore, he proposes to form garancine of any precipitate or extract of madder, either using them separately, or with the garancine results last described. The invention includes other details.

The Erie Canal contains more water and floats more vessels than any canal in Europe, and has 5,568 vessels on its register, of which 1,446 are larger than the one in which Columbus discovered America.

© 1859 SCIENTIFIC AMRICAN, INC.

Scientific American.

NEW YORK, JANUARY 8, 1859.

Physical Development in America.

For eighty years we have existed as an independent power among the nations, asserting by brain force and nervous skill our equality with the older races from which we sprang, and doing credit to the Tenton and Celtic tribes (who were our originators), in point of intellectual power and vigorous thought. This statement is one which we believe will be acknowledged by the most prejudiced commentator on our social system. But while we proudly indite such a fact, we are also compelled to acknowledge that we have deteriorated in physical development. The causes of this deterioration have been a consequence of our independence ; for to prove that we were capable of doing what in the revolutionary days we said we could achieve, it was requisite that for a time we should forget our personal materiality, and think only how best to use the "dweller in the temple," regardless of the temple itself. Having now, however, proved the position that our forefathers assumed and being able to keep it with the exercise of an ordinary amount of brain force, it is necessary that we should look to the walls of the temple, in order to preserve it in that sound and weather-proof state that its Grand Designer intended it to be.

Nearly every lecture this season has had something bearing on this question ; and there is in the press a mighty surging, that indicates truly the waves of argument that are to come, and wash muscle, bone, and sinew into the American child. On every hand we see it exciting good men's attention; and even from the pulpit we have heard, so to speak, muscular Christianity, preached. Pure health in a normal man is more the natural balance of thought, feeling, and bodily vigor than the mere absence of disease, and with us this balance has been somewhat impaired, and would we keep that power to go-a-head as we wish --would we show that our thoughts are good or great, our principles noble or sublime—we must keep in healthy action and perfect tune the instrument through which they reveal themselves to the outer world. This is the body (the frame-work) that contains our individuality—"the house *we* live in."

That pleasant philosopher, Dr. O. W. Holmes, says in a recent number of the *Atlantic Monthly*, "——the strong hate the weak. It's all right. The arrangement has reference to the race, not the individual. Infirmity must be kicked out, or the stock run down." Harsh as this may appear, it is true; for we cannot afford, our bodies being necessary agents to effect the objects of our wills, that they be constitutionally weak, and incapacitated for the labor they have to do, and that the will commands, or the thought inspires them to perform. There is a bodily insanity as well as a mental one ; and as excess of any kind induces the one, so does want of air, exercise, and equalizing action produce the other.

There is another grand cause of bodily infirmity in this country, and that is, the vast amount of quack medicines which are annually swallowed by persons, for purposes honest and dishonest, and which, if they do not inflict punishment on the partaker of them, yet surely stamp upon the offspring—our future greatness—the mark of a father's folly or a mother's weakness.

We have no fear, however, that there will be a sufficient number to look on the melancholy side of the question ; therefore let us prefer, as pioneers, to show the road to health and national *physique*. This physical education must begin with the young; and to their improved condition, the result of training, must we look for an athletic American people.

The first grand necessity of life is fresh air; and we can assure many persons who act as if they thought the reverse, that fresh air will not ordinarily kill babies, in fact, the youngest child should have as much fresh air as possible,. should be loosely clad, and allowed to crawl about a great deal. The educational system should include the gymnasium, and regard the art of calisthenics as a very fundamental part of learning. Boys, and even girls, should be encouraged in vigorous sports—flying the kite, bowling the hoop, or similar games. We sometimes count, in one day, half-a-dozen or more target companies passing our office, to shoot for prizes at some suburban lager bier garden ; and we have thought how much better it would be, and how much more good it would do the country, were those young men to try their skill at leaping, vaulting, throwing the hammer, or anything that called forth muscle, rather than shooting at a painted board. And it would be more patriotic, too, for the use of the gun is quickly acquired, should it ever be wanted for war; the muscle and strength to use that gun are not to be had quickly, but are the results of constant activity and exercise.

Our habits are, also, altogether too sedentary, and the ladies, we say it respectfully, are too much within doors, and know too little of rustic roads and the pleasure of country walks. Let them, therefore, try and walk a little more; as much from the cities as possible, and as little into them. Oh ! if the ladies would but make walking a fashion, what a blessing it would be. Again, we want more ventilation in our schools, churches, and houses, and the sanitary condition of our cities is capable of great improvement. Better drainage, more water facilities, and a system of ventilation in the humbler portions of our own city, would, we are sure, reduce the mortality two per cent in one year; and the good that they would do, by improved general health, is incalculable.

We think that we are right when we say that man should not only be intellectually the superior over the brute creation, but that as an animal, he should be the first; and this is only to be obtained by exercise, fresh air, and cleanliness. We wish sincerely to see the American a splendid specimen of physical development, and this is to be impressed on the American mind more strongly than it has ever yet been. In some measure we look to the public schools to start the movement, by affording the pupils every facility for the exercise of their bodies as well as minds. The instructors of the young must learn the laws of hygiene as well as logic, and teach gymnastics in conjunction with the Latin or French grammar. If they will but do this, it will be a grand step towards giving the children better ability to think and study, by being the possessors of healthy bodies, and it will much aid physical development in America.

Boiler Explosions.

In our last issue we merely related the circumstance of the explosion at Belcher's Sugar Refinery, at St. Louis. The boiler which exploded was one of a gang of fifty, as stated in the published testimony taken on the occasion. It was an upright, twenty-five feet high, and contained seventy-five flue tubes. The effect was like an underground explosion of gunpowder. A piece of the boiler weighing 3,500 pounds was projected through the roof of the house high into the air, and carried to a distance of sixty yards, where it fell upon the roof of the main building of the refinery and came crushing down on the floor below ; another piece weighing 1,600 pounds was also carried to a great distance. The building was of brick, three stories high, and 125 feet long, and had walls eighteen inches thick, which came tumbling down after the explosion, as if by a collapsing action. There were four gage cocks on the boiler; and one of the firemen, in evidence, stated that he tried the upper one fifteen minutes before the accident occurred, and the water was flush with it. The chief-engineer, Thomas Shepherd, stated that all tubular boilers were liable to foam, and the gage cocks might not have furnished a test of the quantity of water in the boiler. He had often tried the cocks of a locomotive boiler, and from the test, it appeared to contain plenty of water, while actually it contained but very little. All the steam pipes of the boilers were connected together, so that the pressure was alike in each, namely, 75 pounds on the inch. The engineer, when asked as to his opinion regarding the cause of the explosion, stated that it might have been caused by gases formed in the boiler.

The foregoing is the substance of the evidence given before the Coroner's jury, and from the statement of the chief engineer, it is evident that persons who ought to be better informed on the subject, still entertain the opinion that explosive gases are generated in steam boilers, and that explosions may occur from them. Water is composed of two gases —hydrogen and oxygen; these cannot be decomposed in a steam boiler unless the iron is red hot, in which state it has such an affinity for the oxygen in the steam, that it separates from the hydrogen and unites with the iron, thereby setting the hydrogen free, but this latter gas is not explosive, therefore it could not have caused the explosion.

In our opinion, the explosion was caused by the want of a sufficient quantity of water in the boiler, whereby its flues became red hot, and when fresh water was admitted a vast quantity of steam was suddenly generated, the pressure of which tore the boiler across at the over heated line where it was weakest. The sudden expansion of the steam would cause the boiler to be projected upwards with the terrific violence described as having occurred in this case.

When water is first admitted upon red hot iron, it assumes the spheroidal condition, and steam generates slowly, but as the metal cools, the water spreads out and the steam forms with electric rapidity, and generates an intense pressure. A cubic inch of red hot iron at 1,172 degrees will convert a cubic inch of boiling water into 1,700 cubic inches of steam ; and 20 square feet of red hot boiler plate six-eighths of an inch thick, at a bright red heat, will convert a cubic foot of water in a few seconds into 1,760 cubic feet of steam. It is easy to conceive, therefore, how dangerous it is to allow the water to become too low in steam boilers, and it is also as easily to be understood what risk there is in cooling the plates suddenly when they become red hot.

In the arrangement of a gang of boilers, each should have its own water pipe, yet it is not uncommon to find a series of boilers so arranged that the water is fed into one exclusively, and the whole being connected with water pipes, the feed has to pass through from the first into all the others.

In a letter recently received from a correspondent, he states that he has two cylindrical boilers thus connected, and it frequently happens that the water will be very low in one, while it shows a full gage in the other. Such an arrangement of boilers is undoubtedly the frequent cause of explosions.

The New Light.

The publication of our article on page 109 of the present volume, SCIENTIFIC AMERICAN, on "The Wonder of the Age," has exposed us to the infliction of several attempts to extinguish our humble taper of science by a deluge of letters on "Hill's New Light." One of these correspondents has really the temerity to charge collusion between us and the Buffalo (N. Y.) Gas Company—a body of whose existence we were scarcely aware before, and with whose members we are about as well acquainted as with those of Solouque's cabinet. He acknowledges authorship in the pamphlet on "The Wonder of the Age," and, of course, this affords an explanation for his refined and sensitive expression of feeling. We have also received a letter from the patentee, which is unexceptionable in its tone. He dissents from our views of its nature, and seems to have come to the conclusion that it burns the air different from other lights. The phenomenon of combustion in Mr. Hill's light is precisely similar to what it is in any other gas light—every scientific man knows this. Several of the letters received place great stress upon the intense heat obtained from this light, and on this head predicate its economy as a substitute for coal in smelting, &c. Such views are not correct, because the most intense heat obtained from the combustion of any substance is from hydrogen gas, of which there is a greater amount in alcohol than in the Neubian oils; and it would therefore upon this principle of reasoning, be much cheaper for fuel. We have seen no cause to modify the remarks heretofore made by us on this subject; they were candid, and free from all personalities, and were based upon an examination of the light and a full acquaintance with the invention.

The Death of Henry L. Ellsworth.

This melancholy event took place on the 27th ult., at the residence of the deceased in Fair Haven, Ct.

He was twin brother to the Hon. Wm. W. Ellsworth, formerly Governor, and now Judge of the Supreme Court of Errors of Connecticut, and the two were the youngest children of the Hon. Oliver Ellsworth, of Windsor, Ct., second Chief Justice of the United States. After graduating at Yale College in 1810, and studying law with Judge Gould at Litchfield, he married the only daughter of the Hon. Elizur Goodrich, of New Haven, and settled at Windsor on the estate of his father, in the practice of his profession and the pursuits of agriculture. He was appointed by Gen. Jackson, as President Commissioner among the Indian tribes to the south and west of Arkansas. While employed in this service he made extensive circuits towards the Rocky Mountains. In one of these he was accompanied by Mr. Washington Irving, who thus obtained the materials of his remarkable work upon our western prairies. At the end of two years, Mr. Ellsworth was called to Washington, and placed at the head of the Patent Office.

At the expiration of about ten years, Mr. Ellsworth resigned his connection with the Patent Office, and established himself at Lafayette, Indiana, in the purchase and settlement of United States land.

About two years ago, Mr. Ellsworth found his constitution sinking. He therefore determined to remove to his native State. He recently visited Lafayette for the adjustment of his affairs, and, in less than a week after his return, was seized with an attack which ended his life, in the sixty-eighth year of his age.

For many years we have enjoyed the personal friendship of Mr. Ellsworth, and he seldom, if ever, came to this city without making us a sociable visit. He was also a strong friend of the inventor, and ever evinced a deep interest in the progress of legislation for the benefit of this very useful class of our citizens. He was also a warm supporter of the SCIENTIFIC AMERICAN, and we are indebted to him for repeated evidences of his confidence in our teachings, professions, and practices. In the death of Mr. Ellsworth, we feel that we have lost a valued friend, and our country has lost one of its most useful citizen. We shall miss his cheerful face, and intelligent conversation. Peace to his ashes !

HARDNESS OF ALLOYS.—Professors Calvert and Johnson, of England, in experimenting upon various alloys, find that copper 49.32 parts, and zinc 50.68 parts, has a hardness nearly equal to an alloy containing 90 per cent. of copper, that it is as rich in color, and they give it as their opinion that it is not a mere alloy but a definite chemical compound. They recommend it for bearings as being equal to the best brass, and considerably cheaper.

© 1859 SCIENTIFIC AMRICAN, INC.

Covering Engraved Copper Plates with Copper.

A valuable paper was recently read before the Society of Arts in London, by M. F. Joubert, on a method of rendering engraved coppes plates capable of producing a much greater number of impressions. The method of doing this is to cover their surfaces with an electro-plated coat of iron, which is a harder metal. The battery used for this purpose is one of intensity, and *Bunsen's* is preferred. The trough in which the engraved plate is to be immersed is lined with gutta percha, and is of such a size as the work to be executed requires. It is filled with a solution of hydro-chlorate of ammonia in the proportions of one part (by weight) of the sal-ammoniac to ten of water. A plate of clean sheet iron, in size nearly the length and width of the trough, is first attached to the positive pole of the battery, and immersed in the solution; and another plate of iron of half the size is then secured to the negative pole, and also placed in solution. The trough is now suffered to remain in this condition for about three days, in order to obtain a peculiar preparation of the iron, which is taken up from the plates. The one on the negative pole of the battery is now removed, and the copper engraved one to be coated is substituted, and kept in the bath until the proper coating of iron is deposited. If, on immersing the copper plate, the iron does not begin to be deposited at once in a bright coating over the whole surface, it is a sign that the solution is not in proper condition. The copper plate is then removed and the iron one returned, and allowed to remain until sufficient iron is taken up in the solution to render it of proper strength for deposition when the copper plate is re-immersed. The time required in obtaining a proper coating of iron in this manner varies; but the plate should not be allowed to remain in the solution after the bright coat of the iron begins to exhibit a blackish appearance at the edges. When the plate is coated sufficiently with the iron, it is taken from the bath, and washed carefully with rain water, by causing jets to flow against its surface, after which it is dried, washed with spirits of turpentine, and is ready for printing in the usual manner. A plate prepared in this manner, it is stated, instead of being able, like one of pure copper, to print only about 800 impressions without re-touching, will print 2,000 impressions.

The operation of coating in this manner can also be repeated on the same plate for a number of times, so as to produce a very large number of impressions. M. Joubert stated that an electro-copper plate, thus treated, had yielded twelve thousand impressions, and was then found to be as perfect as when it was first engraved. This appears to be a valuable discovery, and is the first really successful effort, we believe, that has been made in coating engraved surfaces of a softer metal with iron by the electro-plating process.

Fall of Water through Notches.

A series of experiments have recently been made in Ireland, by James Thomson, of Belfast, at the expense of the British Association of Science, on the velocity and flow of water through V notches. In gaging streams to determine the quantity of water which flows per second, it has hitherto been the practice to cause them to flow through rectangular notches in vertical boards. The hight at which the still water stands behind the board and above the lower edge of the notch is taken as the hight of the fall. The mean velocity of the stream which falls over the lower edge of the notch bears a certain proportion to that of falling bodies in free space; the contraction of the notch prevents the water falling as fast as a free body, hence experiments have been made with notches to find a factor or co-efficient of contraction. A body falling one foot acquires a velocity of 8.02 feet per second; the co-efficient of contraction adopted for rectangular notches is 5.4. o find out the quantity of water which flows per second through a notch or under a sluice, the rule is to multiply the square root of the hight from the surface of the water by the factor 5.4 into the area of the notch in feet; the resultant is the quantity of water discharged per second in cubic feet. But if the water flows over the board or sluice, the rule is to allow only two-thirds of the above resultant as the quantity discharged. The co-efficient of contraction generally used for rectangular notches is not perfect; it varies with different hights and notches of different sizes, and although tables of these variations have been made, yet for convenience a general co-efficient is adopted. The triangular notch employed by Mr. Thomson is supposed to be more accurate for general use than a rectangular one, as it maintains the same figure whether the flow of water be great or small, whereas a rectangular notch, when the water becomes low, is deeply curved on its upper surface.

The formula deduced from the experiments referred to may be thus stated for practical purposes. For the mean velocity of the stream take eight-fifteenths of the velocity due to the hight of the fall from the surface of the dam to the apex of the V notch, and for the area of the contracted stream, take five-eighths of the triangular area from the surface of the water. In other words, it may also be thus stated: the quantity of water which flows per second through a triangular notch is equal to the area of the angle multiplied by one-third the velocity (8.02) due to the hight of the fall from the surface of the water to the apex. According to this formulæ, the quantity of water passing through a V notch of 144 square inches area, and one foot fall, will be 2.67 cubic feet per second, or 0.93 less than by the common formula. These experiments are interesting to hydraulic engineers and millwrights.

Soap.

C. N. Kottala, of Liverpool, G. B., has recently made some improvements in the manufacture of soap, which consist in adding to soda lyes made in any way, a certain quantity of alum for the purpose of producing purified lyes, which purified lyes are capable of saponifying all fatty matters and resins used for soap, making at one operation and with better result than heretofore, as by their employment full or perfect saponification is obtained. The patentee first heats the soda lye, and to every cwt. of lye marking 10° Beaumé, he adds about 12 ounces of alum; to every cwt. of lyes marking 15° Beaumé, he adds about 18 ounces of alum; to every cwt. of lye marking 20° Beaumé, he adds about 24 ounces of alum; to every cwt. of lye marking 25° Beaumé, he adds about 30 ounces of alum; that is to say, he adds for every degree of strength in each cwt. of lye, about one one-fifth of an ounce of alum; he then agitates the lye for about half an hour until the alum is well dissolved, and leaves the mixture to settle and become clear. It will be found that by the employment of soda lye, purified and treated as above, perfect saponification of the fatty matters and resins used in the manufacture of soap will be the result.

A second invention consists in combining fatty matters with concentrated soda lyes and lime liquor, for the purpose of quickly producing cheap and saleable compact neutral soap. The fatty matters may be any of those usually employed. The patentee makes the lye strong and highly concentrated, and then purifies them by adding a certain quantity of alum—say to every cwt. of highly concentrated lye about six or seven pounds of alum. He prepares the lime liquor by combining water and lime, and then adding to it a certain quantity of sal-ammoniac—say to every cwt. of lime liquor about one pound and a-half to one pound and three-quarters of sal-ammoniac. The materials are mixed and boiled together so as to form a saleable compact neutral soap very quickly.

A third improvement consists in mixing fatty matters with certain quantities of highly concentrated soda lye, which the patentee purifies with a certain quantity of alum and sal-ammoniac, for the purpose of producing better and cheaper neutral hand or skin soap than by any means heretofore adopted; and the manner in which the patentee carries his invention into practical effect is as follows:—He prepares the highly concentrated lyes by boiling, until they reach about 30° to 33° Beaumé, adds about five pounds of alum to each cwt. of lye, and boils both together about half an hour. He removes the lye and alum from the heat, and adds to each cwt. of lye one pound of sal-ammoniac, stirs half an hour, covers, and allows the mass to settle and become perfectly clear. To obtain the lye stronger than 33°, he makes a second addition of alum, but in smaller proportion. To obtain lye of 42°, he makes a third addition of alum, and then adds the sal-ammoniac. He melts a quantity of any fatty matter used in soap-making, and, while still hot, stirs and adds the highly concentrated purified lyes, prepared as above described, say, to every 100 pounds of fatty matter about 100 pounds of the lye of 30° Beaumé, or about 90 pounds of the lye of 33° Beaumé, or about 80 pounds of the lye of 36° Beaumé, or about 70 pounds of the lye of 39° Beaumé, or about 60 pounds of the lye of 42° Beaumé, continues to agitate the mass until it commences to become thick, and when thick it can be transferred to the frames. After the soap is finished it may be colored, mottled, or perfumed in the manner well-known to soap-makers.

Ancient Philosophy.

Professor Youmans, in his lecture on Ancient Philosophy, assumed that the idea, often advanced and entertained by many, that the ancients were wiser than the moderns, is unfounded and untrue. In literature, the fine arts, and speculative philosophy, it may be admitted, the ancients excelled. Appelles and Phidias in art, Demosthenes in oratory, Pericles in statesmanship, Euclid in mathematics, Prœtus and Scopus in architecture, Homer in poetry, were stars of the first magnitude in the galaxy of genius; but in natural philosophy and useful arts, the ancients were deficient, ignorant, visionary, in the dark. Man, we may say, has two natures, an outward nature, by his association through the senses with the outward world, and the inward, ideal nature in the realm of mind. The earliest ancient philosophers, as mental children, were curious about the cause and origin of all things, and being without experience, continuously theorized upon such subjects. Thales insisted that water was the primary source of all created things; Anaximenes, that air was the original element of creation; Heraclitus and Pythagoras, that all matter sprang into form and substance by fire; Empedocles and others maintained that there were four primary elements—earth, water, air, and fire. Some insisted that metals grew in mines as plants grow; they also argued that lightning was a bolt from Jupiter, to be prevented by prayers and sacrifices; that water rose in a tube void of air, because nature abhors a vacuum; with Empedocles and Plato, they thought that light proceeds originally from the eyes, and then is reflected back to them by the objects lighted; they taught that eclipses are caused by a dragon swallowing the moon; that death by carbonic acid gas, in deep wells or cells, was caused by the fabled Basilisk, and that the stars moved with the sun in separate spheres or epicycles, to the "music of the spheres." Thus the ancients continuously sought an elucidation of the phenomena of the outer world by conjectures of their inner world of mind. Plato and others insisted that all outward objects, and observations or exercises of the senses, were positive obstructions to the growth and happiness of the soul, and that the body of man was a prison or dungeon to the mind. This doctrine led to the detestation, among philosophers, of material appliances, so that trades and physical pursuits, or inventions, were regarded as only fit for slaves, while discussions of verbal theories, syllogisms, and disputes and asceticism were alone worthy of philosophical considerations. This ideal philosophy, with its abhorence of the flesh and the world, blended with the first espousal of Christianity and Paganism, and extended through the scholastic periods of the middle ages, down to Kepler and Bacon's time, while such men as Turner of England (or Thomas Aquinas?) inquired "if a hog is led to market with a rope round his neck, and a man holding it, is the hog or the man led by the rope?" and others disputed long as to how many angels could dance on the point of a needle without crowding. This theoretic, ideal, mystic system of philosophy even prevailed, in some departments, to about the middle of the eighteenth century, up to which time the people, and even the physicians themselves, believed that scrofula or the "King's Evil" could be cured only by the touch of a king on the patient.

Hair Wash for Dandruff.

A correspondent writing to us requests a recipe for "preparing bear's grease," to prevent his hair falling out, and to free his head from dandruff. We are not acquainted with any preparation of bear's grease which is capable of effecting such important results. If there is any virtue in bear's grease to accomplish such objects, we think the genuine article must be superior to any chemical preparation of it, and the only way to obtain it pure, to a certainty, is to nab "Bruin," and make sure of his pork.

We give, as follows, however, a very good recipe for making a hair-wash which will remove dandruff and keep the scalp clean and soft, so as to prevent the hair, in ordinary circumstances, from falling out:—Take one pint of alcohol and a table-spoonful of castor oil, mix them together in a bottle by shaking them well for a few minutes, then scent it with a few drops of oil of lavender. Alcohol dissolves castor oil, like gum camphor, leaving the liquid or wash quite clear. It does not seem to dissolve any other unctuous oil so perfectly, hence no other is equally good for this purpose.

The New Bell of Westminster.

The great bell was only tried yesterday, says the London *Times* of the 19th ult., and not with the hammer, but with the clapper. The rope was passed down to the clock chamber, and the bell spoke out in tones not likely to be forgotten by those who were seated in the belfry. The first stroke was slight, but afterwards it came, peal after peal, in a tremendous volume of sound, that was actually painful. It seemed to swell and grow upon the air, with a vibration that thrilled every bone in the listener's body with a painful jar, becoming louder and louder with each gigantic clang till one shrank from the awful reverberations as from something tangible and dangerous to meet. Many went upon the balustrade outside the chamber, to avoid the waves of sound that seemed eddying round the tower; but the escape was only a partial relief, the great din seeming almost to penetrate the stonework of the battlements, and jar the very place in which one stood.

Sorghum Molasses and Printers' Rollers.

There is an old saying, that "everything has its own purpose and its own place." This axiom is literally true, as it regards molasses and glue of which printers' rollers are composed. Various other substances have been tried for the same purpose, but none seem to answer so well. It is stated, however, that Sorghum molasses when mixed with glue make superior inking rollers to those in common use, made from cane juice molasses. They are stated to be more elastic, and much tougher, and the molasses can withstand longer boiling without granulating.

© 1859 SCIENTIFIC AMRICAN, INC.

Correspondents

** PERSONS who write to us, expecting replies through this column, and those who may desire to make contributions to it of brief interesting facts, must always observe the strict rule, viz., to furnish their names, otherwise we cannot place confidence in their communications.

G. & W. B., of Conn.—Brasswork must be perfectly free from grease in order to render it fit for electro-plating. It should then be washed in a caustic lye. The acids employed to brighten brasswork are either sulphuric or muriatic; the former is the cheapest. One part of acid to one of warm water is of sufficient strength.

L. B., of Va.—You state that the water in your cistern is ten feet higher than your stable, and yet it sometimes will not flow, and you ask what kind of suction pump is the best to start with? A common hand wooden pump, with flexible suction tube will answer the purpose. The water ceases to flow either from the accumulation of air in some bend of the pipe, or from the want of sufficient pressure on the surface water of the cistern. If the cistern is open at the top, the resistance must be in the pipe.

TALLOW CUTTING MACHINE.—In answer to an inquiry made through our columns for a machine for this purpose, we are informed by Warren Hathaway & Son, of New Bedford, Mass., that they can furnish such a machine.

M. B., of Iowa.—Smee's battery is as good as any other for electro-plating, and it is used by silver plating establishments in this city. Mathiot's battery is a good one. Jewelry is colored by enameling, not electro-gilding. The only secret in preparing articles for electro-plating is to have their surfaces perfectly free from grease and oxyds. There is no periodical published which is exclusively devoted to electro-metallurgy.

H. K., of Wis.—An engine having a piston of 28 inches area, pressure 50 pounds on the square inch, and velocity of piston 400 feet per minute is double the power of one moving 200 feet per minute; but to double the speed of a locomotive, it requires four times the power, because the resistance increases according to the square of the velocity.

W. C. G., of Phila.—The barometer to which you refer is quite different from the one described in your letter, which appears to be an ingeniously constructed instrument of the aneroid character.

R. F. B., of R. I.—Instead of obtaining any benefit from air-tight cylinders, they would prove injurious to any vessel to which you might apply them at any part of her hull. Such buoys are not required at the stern of a ship.

R. J. G., of Ind.—In the case you refer to, the patentee should establish the utility and value of the invention within the territory sold. A method of preserving ice might be valuable in Jamaica, but worthless in Greenland. An English patent does *not* furnish any greater evidence of the value of an invention than an American patent.

W. A. G., of Ind.—Nasmyth's steam hammer appears to be the one you wish to obtain, if so, communicate with Messrs. Merrick & Co., Philadelphia, who build them. It appears to us that you should get a large steam engine for operating your rolls and squeezers, as well as hammers in making bar iron. You should, therefore, employ an engineer acquainted with the business to get up the machinery.

W. G. M., of Ohio.—The "still wines" of commerce, when the term is used to distinguish a wine from the sparkling variety (as "still Catawba" and "sparkling Catawba"), have been fermented, and contain alcohol. The juice of the grape cannot be intoxicating without having under one fermentation, this process being necessary to the development of alcohol. Unfermented liquors are merely sirups or cordials, and have no right to be called wines.

A. W., of N. Y.—We do not know any work which gives the pressures that different kinds of wooden tubes are capable of sustaining.

F. B. R., of Mass.—Glue, and especially the strong yellow quality, is the best which you can use for pasting your paper tubes. You can easily keep it warm by the use of a jet of gas or an alcohol lamp.

THE following cure for a cold has been on record, says the *Evening Post*, since 1340:—

Putte your feet in hot water
As high as your thighes,
Wrappe your head up in flannelle
As low as your eyes;
Take a quart of rum'd gruelle,
When in bedde, as a dose:
With a number four dippe
Well tallowe your nose.

This may be correct, but we hardly think that "number four dips" were known in 1340,

G. E. S., of Pa.—You will find a table on the radius and pitch of wheels, on page 95 of "Templeton's Millwrights' Companion," published by D. Appleton & Co., of this city; the price is one dollar.

J. B., of Conn.—No person has the right to stamp the word "patent" on any article or machine, for which a patent has been obtained, without the consent of the patentee or assignee; nor has he a right to stamp any unpatented article: every offense renders him liable to a fine of $100, Any invention which has been in public use for more than two years prior to the application for the patent becomes public property.

A. B., of Mich., and F. A. C., of N. Y.—The "vesper light" is a name given to a lamp which generates camphene into gas at the burner, and has no wick. Such lamps appear to be safe, if carefully managed. Common oil cannot be used in this lamp.

J. B., of N. Y.—Soda renders glass fusible according to the quantity used in the composition. Manganese gives glass a deep green color; iron also renders it green in color. Five per cent of lime, and a like quantity of soda and oxyde of manganese, will make it according to the color you desire.

J. C., of N. H.—Send us your name that your model may not be lost among the large number we have constantly to take care of. We are of opinion that your paddle wheel possesses no patentable novelty. The concave bucket is quite an old thing. Your press is quite a common device for forming articles of plate metal and not patentable.

W. H., of Ill.—On page 59, this volume, of the SCIENTIFIC AMERICAN, you will find a full description of a very good ice-house.

T. D., of Wis.—You cannot obtain any power to drive machinery by securing a series of buoys on an endless belt, passing over a drum at each end, and making one set of buoys pass through a vessel containing water, while the other set is coming down on the other side. You seem to think that a floatage power will be created by the buoys passing up through the water. This is a mistaken idea. The series of buoys on each side of the belt balance one another, and therefore cannot generate a power. The same idea has been presented to us many times as a means of obtaining "perpetual motion."

W. H. H., of Ohio.—A good work on architectural drawing may be had by applying to Messrs. Appleton, publishers, this city.

Money received at the Scientific American Office on account of Patent Office business, for the week ending Friday, Dec. 31:—

B. H. H., of R. I., $30; L. H. & R., of N. Y., $30; J. B. S., of Texas, $20; W. B., of N. Y., $25; W. W. S., of N. Y., $80; F. V., of Texas, $43; A. & B. N., of N. Y., $30; H. B., of Va., $25; S. D. L., of Mich., $30; S. B. G., of Conn., $58; C. D. W., of Ohio, $30; B. F. S. M., of N. Y., $25; E. H., Jr., of N. Y., $100; H. W., of Vt., $30; G. C., of N. Y., $30; S. S. B., of R. I., $20; R. H. K., af Mo., $25; D. B. DeL., of N. Y., $30; E. D. J., of Mo., $25; P. & B., of N. Y., $30; H. L. W., of Mass., $10; N. C. S., of Oonn. $30; D. S., of Cal., $10; J. P., of Cal., $30; W. P., of Ohio, $30; H. D., of N. Y., $30; T. L. B., of Ind., $30; E. A. S., of Pa., $20; L. H., of N. J., $12; A. S., of N. Y., $40; J. McD., of Mich $30; O. W. J., of N. Y., $30; J. H. T., of Ill., $30; L. P., of N. Y., $90; F. P. P., of Conn., $25; W. C. D., of Mass., $30; J. B. F., of Wis., $25; W. A. McD., of N. Y., $30; J. L. P., of N. Y., $30; P. C. F., of N. Y., $20; J. R., of Conn., $20; S. S. M., of Ohio, $30; W. & L., of Conn., $55; H. A. R., of N. Y., $30.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Friday, Dec. 31:—

L. H., of N. J.; F. P. P., of Conn.; E. D. J., of Me.; J. G. B., of Mo.; W. B., of N. Y.; O. W. J., of N. Y.; H. M. P., of Mo.; J. J., of Ohio; B. F. S. M., of N. Y.; H. A, R., of N. Y.; G. C., of N. Y.; A. M. O., of Conn.

IMPORTANT TO INVENTORS.

AMERICAN AND FOREIGN PATENT SOLICITORS.—Messrs. MUNN & CO., Proprietors of the SCIENTIFIC AMERICAN, continue to procure patents for inventors in the United States and all foreign countries on the most liberal terms. Our experience is of thirteen years' standing, and our facilities are unequaled by any other agency in the world. The long experience we have had in preparing specifications and drawings has rendered us perfectly conversant with the mode of doing business at the United States Patent Office, and with most of the inventions which have been patented. Information concerning the patentability of inventions is freely given, without charge, on sending a model or drawing and description to this office.

Consultation may be had with the firm, between nine and four o'clock, daily, at their principal office, 128 Fulton street, New York. We established, over a year ago, a Branch Office in the City of Washington, on the corner of F and Seventh streets, opposite the United States Patent Office. This office is under the general superintendence of one of the firm, and is in daily communication with the Principal Office in New York, and personal attention will be given at the Patent Office to all such cases as may require it. Inventors and others who may visit Washington, having business at the Patent Office, are cordially invited to call at our office.

Inventors will do well to bear in mind that the English law does not limit the issue of patents to inventors. Any one can take out a patent there.

We are very extensively engaged in the preparation and securing of patents in the various European countries. For the transaction of this business we have offices at Nos. 66 Chancery Lane, London; 29 Boulevard St Martin, Paris; and 26 Rue des Eperonniers, Brussels. We think we may safely say that three-fourths of all the European patents secured to American citizens are procured through our Agency.

Circulars of information concerning the proper course to be pursued in obtaining patents through our Agency, the requirements of the Patent Office, &c., may be had gratis upon application at the principal office or either of the branches.

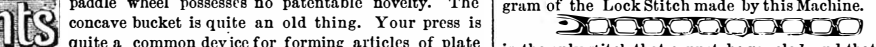
FRANCIS' GALVANIC PROCESS FOR THE alleviation of pain in extracting teeth, with Clark's patented improvements. The city of Philadelphia has just awarded the Scott legacy medal and premium to this invention. A machine, with full instructions how to use, accompanied with a license for the full term of the patent, will be sent to any address on the receipt of $60, or, without the machine, on the receipt of $50. The patent has been sustained in a recent suit in the United States Court.
JAMES J. CLARK,
Assignee and Patentee, 703 Spruce st., Philadelphia.
18 2*

PATENT RIGHT FOR SALE.—THE BEST suction pumps now in existence are those of Henry Zeug, of Elizabethport, N. J., which have been illustrated and described in No. 17 of this paper. They are of immense value for ships' pumps, one man being able to operate the largest one of them and to lift the water to any hight. They never get out of order. For fire engines they are invaluable, as they give out 50 per cent more water and require 50 per cent less power than common force pumps. This is done by perfectly excluding the external air, and as no air-chamber is required no pressure of air is to be overcome. These pumps are applicable for hydraulic presses, with the same advantage. For particulars, please address the patentee, HENRY ZEUG, Elizabethport, N. J. 18 3*

MARRIED LIFE: ITS DUTIES AND Dangers.—Just published by the American Female Guardian Society, "Home Whispers," by Melva. Sent by mail, post-paid, on receipt of price, 75c., gilt $1. Sold by booksellers generally, and at the office of the Advocate and Guardian, 29 East Twenty-ninth street, New York. The Advocate and Guardian is an interesting family paper, 16 pages, semi-monthly, (384 pages a year,) at $1 single copy; 10 copies, to one address, $5 a year. All the profits of our publications are devoted to the "Home for the Friendless."

"They are without a rival."—Scientific American.

WHEELER & WILSON'S SEWING MA- CHINES—Price greatly reduced for New Style, price $50. Office, No. 343 Broadway, New York. Diagram of the Lock Stitch made by this Machine. This



is the only stitch that cannot be raveled, and that presents the same appearance upon each side of the seam. It is made with two threads, one upon each side of the fabric, and interlocked in the center of it. Send for a circular. 6 tf

---

HOYT BROTHERS, MANUFACTURERS OF patent-stretched, patent-riveted, patent-jointed, Oak-Leather Belting; Store, 28 and 30 Spruce street. Manufactory, 210, 212, 214 and 216 Eldridge st., New York. A "Treatise on Machinery Belting" is furnished on application, by mail or otherwise—gratis.
16 12*

INGOT COPPER, SPELTER, BANCA TIN, Lead, Antimony, Babbitt Metal, Mount Hope Cut Nails, Ames' Shovels and Spades, for sale by JOHN W. QUINCY & CO., No. 98 William st., New York.
13 e5w tf*

DINNER AND GAS AT ONCE—THE GAS Generating and Cooking Range Co. are prepared to supply their apparatus on demand. Circulars sent post free. No. 512 Broadway, New York. 16 4*

BALL'S OHIO MOWER—THE MOST SUCcessful one in the world. Awarded the first premium at the Syracuse trial, and equally as good a reaper as a mower. Patent fee, $10. Manufacturers wanted. E. BALL, Patentee and Manufacturer.
16 4* Canton, Ohio.

$5.000 DOUCEUR—THE UNDERSIGNED, the inventors and manufacturers of the "New Patent Safety Fuse Train," offer the above sum to any party or parties who will engage, by a practical method, to render their Fuse Train perfectly impervious to water, thoroughly adapted to submarine purposes, and fitted for government use, with Gutta Percha, or any other covering. The test to abide the decision of a duly qualified committee of government officials. Apply at the Brooklyn Navy Yard, from 10 A. M. till 4 P. M.; at the new machine shop, or at the office, 134 Mercer street, New York. Samples will be given to parties for covering.
1* GOMEZ & MILLS.

CORLISS' PATENT STEAM ENGINES—On application, pamphlets will be sent by mail containing statements from responsible manufacturing companies where these engines have been furnished, for the saving of fuel, in periods varying from 2½ to 5 years. (The "James' Steam Mills," Newburyport, Mass., paid $19,734 22, as the amount saved in fuel during five years. The cash price for the new engine and boilers was but $10,500.) These engines give a perfectly uniform motion under all possible variations of resistance. Two hundred and fifty, varying from about 20 to 500-horse power, are now in operation. Boilers, shafting, and gearing.
15 26* CORLISS STEAM ENGINE CO., Providence, R. I.

WATER POWER AND MILL SITE FOR SALE—The Society for Establishing Useful Manufactures at Paterson, N. J., propose to lease for 21 years, renewable for ever, a mill lot with six feet of water, to be taken from the first or upper canal, and discharged into the second or middle canal. The head and fall is about 24 feet. The mill lot is well adapted for any manufacturing business. This property is ready to enter on—is at Paterson, and convenient to the city of New York, with railroad and canal conveyance, in the heart of a large manufacturing population, and all the advantages incident to such a locality. For particulars apply at the office of the Society, Paterson, N. J. 17 6*

GREAT FAIR AND EXHIBITION OF the AMERICAN UNION for Inventors, Manufacturers, Mechanics, &c., at No. 620 Broadway, New York. This Fair is now open to the public; but inventors and others are allowed to send in articles for competition at any time previous to the 20th of January next. Diplomas, &c., will be awarded during the month of March, but the Exhibition will be continued during the year 1859, at No. 620 Broadway. Address communications to J. L. RIKER, Director, American Union, New York. 17 4t

---

HOWE'S WEIGHING SCALES—STRONG & ROSS' PATENT. Having received first-class premiums from the Vermont State Fair, New York State Fair, Virginia State Central Fair, United States Fair, Virginia State Fair, and Franklin Institute Fair, within sixty days, we have now only to invite the public to examine our large stock of scales of every variety, and also to test the principle of a six-ton scale, set up on the floor of our store, as well as to examine certificates of their superiority from many of our leading houses. FRANK E. HOWE,
No. 438 Broome st., first door from Broadway, New York.
13 13* JOHN HOWE, JR., Brandon, Vt.

CLAY RETORTS—THOS. HOADLEY, PATentee of the Patent Pyro-clay Gas Retorts—manufactory Nos. 32 and 34 Front st., Cleveland, O. 9 12*

ENGINE LATHES, PLANERS, DRILLS, Woodworth Planing Machines, and a large assortment of tools for working in iron and wood, at greatly reduced prices, at the Machinery Depot, 135 North 3d st., Philadelphia, Pa. CHAS. H. SMITH. 13 6*

HARRISON'S GRIST MILLS—20, 30, 36 AND 48 inches diameter, at $100, $200, $300 and $400, with all the modern improvements. Also, Portable and Stationary Steam Engines of all sizes, suitable for said Mills. Also, Bolters, Elevators, Belting, &c., &c.
Apply to S. C. HILLS, 12 Platt st., New York.
1 e3w

GAGE COCKS, OIL CUPS, GAS COCKS, Steam Gages, Globe, Angle and Governor Valves, Flange Cocks, Pumps, &c., manufactured and for sale by HAYDEN, SANDERS & CO., No. 306 Pearl st., New York. 16 13eow*

STEAM WHISTLES—ALL SIZES OF THE most improved patterns constantly on hand. Brass Lift and Force Pumps, (single and double-acting) Ship Pumps, &c., a full assortment. Manufactured by
HAYDEN, SANDERS & CO.,
16 13 eow 306 Pearl st., New York.

A MESSIEURS LES INVENTEURS—Avis Important.—Les inventeurs non familiers avec la langue Anglaise, et qui prefereraient nous communiquer leurs inventions en Francais, peuvent nous addresser dans leur langue natale. Envoyez nous un dessin et une description concise pour notre examen. Toutes communications seront recues en confidence.
MUNN & CO. Scientific American Office, 128 Fulton Street, New York.

Zur Beachtung für Erfinder.

Erfinder, welche nicht mit der englischen Sprache bekannt sind, können ihre Mittheilungen in der deutschen Sprache machen. Skizzen von Erfindungen mit kurzen, deutlich geschriebenen Beschreibungen beliebe man zu addressiren an
Munn & Co.,
128 Fulton Str., New-York.
Auf der Office wird deutsch gesprochen.

The best thing of its size and price—Sent by first mail.

THE ILLUSTRATED ANNUAL REGIS- TER OF RURAL AFFAIRS FOR 1859—Containing practical information for the farmer and horticulturist. Embellished with 144 engravings, including Houses, Farm Buildings, Implements, Domestic Animals, Fruits, Flowers, &c. Price, 25 cents. Address
LUTHER TUCKER & SON, Albany, N. Y.
** Agents wanted in all parts of the country, to whom twelve copies will be sent postpaid for $2, and larger quantities by express on still more favorable terms. 12 8*

OIL! OIL! OIL!—FOR RAILROADS, STEAMERS, and for machinery and burning. Pease's Improved Machinery and Burning Oil will save fifty per cent., and will not gum. This oil possesses qualities vitally essential for lubricating and burning, and found in no other oil. It is offered to the public upon the most reliable, thorough and practical test. Our most skillful engineers and machinists pronounce it superior and cheaper than any other, and the only oil that is in all cases reliable and will not gum. The Scientific American, after several tests, pronounced it "superior to any other they have ever used for machinery." For sale only by the inventor and manufacturer, F. S. PEASE, 61 Main st., Buffalo, N. Y.
N. B.—Reliable orders filled for any part of the United States and Europe. 14 13

STEAM ENGINES, STEAM BOILERS, Steam Pumps, Saw and Grist Mills, Marble Mills, Rice Mills, Quartz Mills for gold quartz, Sugar Mills, Water Wheels, Shafting and Pulleys. The largest assortment of the above in the country, kept constantly on hand by WM. BURDON, 102 Front street, Brooklyn, N. Y. 1 26

HARRISON'S 20 AND 30 INCH GRAIN Mills constantly on hand. Address New Haven Manufacturing Co., New Haven, Conn. 14 13

MACHINE BELTING, STEAM PACKING, ENGINE HOSE.—The superiority of these articles, manufactured of vulcanized rubber, is established. Every belt will be warranted superior to leather, at one-third less price. The Steam Packing is made in every variety, and warranted to stand 300 degs. of heat. The hose never needs oiling, and is warranted to stand any required pressure; together with all varieties of rubber adapted to mechanical purposes. Directions, prices, &c., can be obtained by mail or otherwise, at our warehouse. NEW YORK BELTING AND PACKING COMPANY. JOHN H. CHEEVER, Treasurer. Nos. 37 and 38 Park Row, New York. 14 13

FOR SALE—THREE SLABBING MACHINES with cutters, which have been used in the manufacture of screw wrenches; one nearly new, and all in good order. Also, one large iron Planing Machine, three Engine Lathes, and a lot of small tools used in making wrenches. Inquire either in person or by letter of PETTIBONE & DODGE, No. 77 John st., New York, or of A. P. & E. H. PLANT, Plantsville, Conn. 16 4*

PRIMM, WOLFENDEN & CO., MURFREESboro, Tenn., Machinists and Iron Founders. We are prepared to repair all kinds of machinery. We will also sell on commission all kinds of machinery suitable to this location. Manufacturers would do well to consult us, as we are all practical machinists. 17 3*

SECOND-HAND MACHINISTS' TOOLS—Viz., Engine and Hand Lathes, Iron Planers, Drills, Chuck Lathe, Gear Cutter and Vises, all in good order, and for sale low for cash. Also one new first-class Woodworth Planing and Matching Machine. Address FRANKLIN SKINNER, Agent, 14 Whitney avenue, New Haven, Conn. 14 13

CARY'S CELEBRATED DIRECT ACTING Self-Adjusting Rotary Force Pump, unequalled in the world for the purpose of raising and forcing water, or any other fluid. Manufactured and sold by
CARY & BRAINARD, Brockport, N. Y.
Also for sale by J. C. CARY, 240 Broadway, New York City. 12 tf

---

PATENT COMPOSITION BELTS—PATENT PACKING—The Company have on hand and are ready to supply all orders for their superior Composition Machine Belting. They are proof against cold, heat, oil, water, gases, or friction, and are superior to leather in durability, and much cheaper in cost. The composition gives to these belts uniform durability and great strength, causing them to hug the pulley so perfectly that they do more work than any other belts of the same inches. The severest tests and constant use in all sorts of places during the last 14 months has proved their superiority, and enables the Company to fully guarantee every belt purchased from them. Manufacturers and mechanics are invited to call, examine, and test these belts. The Patent Packing for planed joints is in every way superior to any other article ever used for that purpose. A liberal discount allowed to the trade. "New York and Northampton Belting and Hose Co.," E. A. STERN, Treasurer, 217 Fulton st., New York. 16 tf

---

COAL OIL AND RETORTS—THE UNDERsigned offers his services as an Engineer and Expert relating to machinery and processes in the above business. Terms moderate.
JOSEPH E. HOLMES,
13 10* Newark, Ohio.

FELT FOR STEAM BOILERS, PIPES, Ship-sheathing, and all varieties of felting manufactured to order by JOHN H. BACON, Winchester, Mass. 14 13*

SECOND-HAND SLIDE LATHES, IRON Planers, Steam Engines, Upright Drills, Boring Mills, Woodworth Planing Machines, Sash, Tenoning and Mortising Machines, for sale by CHARLES G. WILLCOX, 135 North 3d st., Philadelphia, Pa. 13 6*

FOR SALE—SECOND-HAND MACHINISTS' TOOLS—One large boring mill for car wheels, weight, 4,000 lbs.; cost $600—price, $250. One large bering mill (English) for car wheels, weight, 2,000 lbs.; cost $400—price, $100. One screw lathe, 8 feet bed, 20 inch. swing, weight, 1,500 lbs.; cost $350—price, $150. Also one 10 ft. planer; cost $850—price, $550. Apply to GEO. S. LINCOLN & CO.,
10 13t* Hartford, Conn.

IRON PLANERS AND ENGINE LATHES of all sizes, also Hand Lathes, Drills, Bolt Cutters, Gear Cutters, Chucks, &c., on hand and finishing. These tools are of superior quality, and are for sale low for cash or approved paper. For cuts giving full description and prices, address "New Haven Manufacturing Co., New Haven, Conn." 14 13

WOODWORTH PLANERS—IRON FRAMES to plane 18 to 24 inches wide—at $90 to $110. For sale by S. C. HILLS, 12 Platt street New York. 1 26

BARREL MACHINERY—THE UNDERsigned, being sole proprietor of Crozier's Patent Barrel Machinery (universally acknowledged to be superior, in every particular, to any ever before offered to the public), is prepared to fill orders for the same at sight. The above machinery is adapted for all sizes and varieties of work. The above machinery is in successful operation in Oswego and Rochester, N. Y., Detroit, Mich., Chicago, Ill., Milwaukie, Wis., St. Louis, Mo., Camden, N. J., Philadelphia, Pa, Augusta, Ga., and different parts of Canada. For machines and rights, address PETER WELCH, Oswego, N. Y., or SLIPPER & GOADBY, New York City. 11 9*

© 1859 SCIENTIFIC AMRICAN, INC.

Science and Art.

Trial of Fire-Engines.

On Christmas-day, in this city, Messrs. Lee & Larned brought out their two steam fire-engines, the "J. C. Cary," illustrated on page 89 of the present volume of the SCIENTIFIC AMERICAN, and the "John G. Storm." They were tried, says the *New York Tribune*, at a pole which is 165 feet in hight, surmounted by a ball and cap, the former 171 feet from the ground, the latter 179 feet 10 inches. The performance of the "Cary" exceeded any yet achieved by any fire-engine, whether worked by hand or steam power. She threw a two-inch stream to the top of the cap, and a $1\frac{5}{8}$ inch fully 25 feet above it, making the total hight not less than 205 feet perpendicular. Playing horizontally, she threw a $2\frac{1}{2}$ inch stream, through an open butt, a distance of 209 feet. At her highest speed, she made 264 revolutions per minute, discharging upward of 1,200 gallons of water. The "John G. Storm" is but just completed, and had on this occasion her first or experimental trial. Her engines and pump are the same as those the "J. C. Cary," but her boiler power and her weight considerably less. She threw a $1\frac{5}{8}$ inch stream to the ball, a hight of 171 feet, which is fully equal to the performance of the "J. C. Cary" on its first trial. The engines propelled themselves from the Novelty Works to the place of trial, by the way of Twelfth street, the Bowery and Canal street, a distance of three miles, carrying each about ten men in 25 minutes. Both engines performed in all respects to the satisfaction of the builders, and of the various representatives of the Fire Department and of the insurance companies who were present. They were in charge of the Exempt Engine Company, Zophar Mills, Foreman. The new engine is named after the President of the Lennox Insurance Company, who has borne a leading part in securing the introduction of steam fire-engines.

Agricultural Improvements Wanted.

A correspondent—T. Waters, of Shopsspring, Tenn.—wishes us to call the attention of inventors to harrows and portable steam-engines for farmers. He states that a two-horse harrow, so constructed as to have a lateral in conjunction with its forward movement, would be a great benefit to agriculturists, and at the same time be the source of a good income to the inventor." In reference to the dimensions, and the cost of such a harrow, he says :—"We find that a harrow with a frame of four and a half or five feet wide, made with two sections hinged together, and teeth six inches apart, is about as much as two horses can operate on our lands. If it had a side motion of four inches, for every six inches forward, it would not be liable to choke, and it would pulverize the soil in a superior manner. It should not cost more than $25, be very strong, have teeth 14 inches long, and one inch square at the top." He also says :—"We want a lighter and superior steam-engine for agricultural purposes than any which has yet been brought before the public."

With regard to portable steam-engines, there can be no difficulty on this head. There are engineers who can and will build engines of any size to suit the demands of agriculturists. The great object of care in a steam-engine should be the boiler; it should be made of the best materials, so as to be strong and perfectly safe under all circumstances.

A Cheap Filter.

In some situations spring water cannot be obtained, hence rain water is employed for all domestic pusposes. To render it fit for drinking and cooking, it requires to be filtered, as showers carry down insects and their *ova* from the atmosphere and dust from the roofs upon which they fall. It is best to purify rain water before it enters the cistern, and for this purpose a good filter can be made by any person at the cost of only a few shillings. The way to do this is as follows :—Construct a tolerably large and stout wooden box, with a hole in the bottom or at the side near the bottom, and in connection with a pipe leading into the cistern ; nail a coarse cotton or linen cloth over its bottom inside, and then fill it up to within three inches of the top with layers of clean gravel, sand, and charcoal, and over the top of these secure a stout cloth. Into this box lead the pipe, and as the rain passes through it to the cistern, it will be purified and fitted for drinking or any other purpose. The top cloth of this filter can be easily removed and frequently washed. At a little extra cost, this filter may be made so as to rotate on an axis to be turned upside down, and washed out by making clean water rush from its bottom through to the top. It is necessary to make such filters somewhat large to carry off water rapidly during heavy showers.

Miller's Press.

The many appliances for lifting heavy weights with a small amount of power that are in general use, seem almost to leave no room for any further invention or improvement, but our illustration fully proves the contrary, and shows that improvements valuable and complete have recently been made. Fig. 1 is a view of an improved wine press for expressing the juice from grapes, or for squeezing the whey from cheese, or any suitable purposes, and Fig. 2 shows a section of a jack press for lifting heavy weights, on the same principle.

Fig. 1

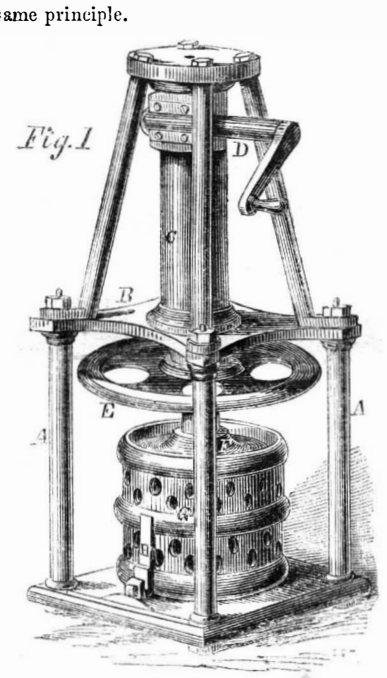
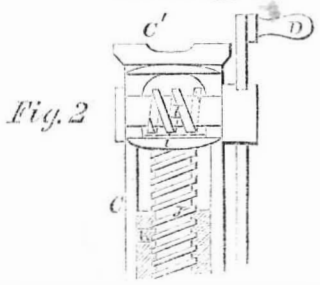


Fig. 2



We learn from a Philadelphia exchange, that recently a man weighing 156 pounds, lifted, with the aid of one of these presses, the great weight of 37,332 pounds, merely by the application of his strength to the lever 20 inches long, and the press weighed only 45 pounds.

A are four posts, supporting the frame, B, in which is secured the cylinder, C, that contains the vertical screw, J, nut or grooved top, *i*, and horizontal screw, I, that rotates it, power being given to I by the handle, crank, or lever, D. To the lower end of the nut, K, in which J works, and that is fitted into the case, C, is attached a hand wheel, E, and follower, F, that presses the contents of the press or case, G, that is attached to the bottom plate of the frame by spring catches, H. C' (Fig. 2) shows the shape of the top of the jack press when it is used to lift.

The operation is as follows :—Grapes or any other substance to be squeezed, are placed in G, and the hand wheel, E, turned. This moves K around J, and brings the follower, F, quickly upon them, and as long as convenient this method of pressure can be adopted, but when it becomes too hard work, the crank, D, is moved, and the screw, J, slowly rotated by the screw, I, when the follower is pressed down slowly, but with great force. These presses are suitable for hand or power; and for lightness or power, for lifting jacks or presses, they are as near perfection as we have ever seen.

The inventor and manufacturer is D. L. Miller, of Madison, N. J., who should be addressed for further information. Specimens are on exhibition at the Fair of the American Union, No. 620 Broadway, for the inspection of mechanics, &c. Patents were obtained for the jack, Dec, 1st, 1857, and for the press Aug. 7th, 1858.

Roesler & Frey's Self-Lighting Lantern.

There is not a sailor who has not experienced the difficulty of lighting the bow, stern, or binnacle lights, some dark and boisterous night when

"The stormy winds did blow."

And there are few farmers who have not wished for some safe means of lighting a lantern in a barn, among hay or fodder, without the danger of setting it on fire. Such a lamp or lantern is the subject of our illustration.

Fig. 1 is a perspective view, and Fig. 2 a diagram of the working parts.

Fig. 1

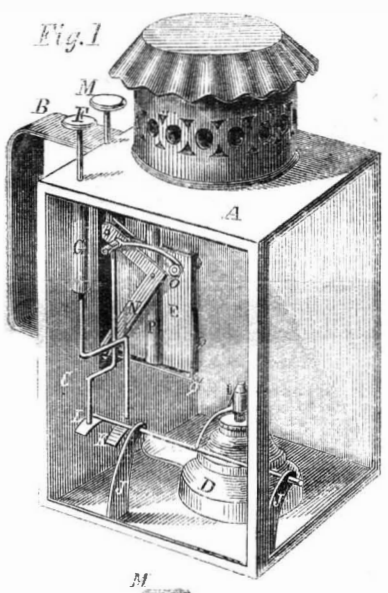
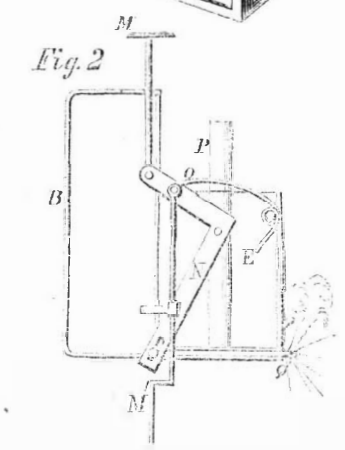


Fig. 2



A is the lantern, and B the handle on the back, C. The lamp, D, is placed on the bottom of the lantern, so that the extinguisher, I, will fall directly over it, and put it out, when operated for that purpose. To the door, C, a match case, E, is attached, that is slightly enlarged at its center, P, to admit of a spring to continually feed the matches to the bottom plate of the box. To this match box, E, is hinged a bell crank, N, that is kept in the position shown in Fig. 2, by the spring, O, and to whose lower end is connected by a slot a small piece, extending through a slot between the bottom plate of E, and the case itself, and the other side of the small piece fits in a slot in a corresponding bell crank, N. To the top of N is attached the rod, with its knob, M, that projects outside the case, and a rod, M', that presses on the pallet, L, on the axle of the extinguisher, that is supported by bearings, J. At the front of the match case are two serrated jaws, Q Q'. A bent shaft, F, passing through a spring case, G, is also placed in the lantern ; this, when the knob, F, is pressed, passes on the pallet, K, and throws the extinguisher on to the wick, putting out the light.

The operation is as follows :—The match case being filled with matches and the lamp trimmed, the knob, M, is pressed, the crank, N, forces the bottom match through the serrations, Q Q', and so ignites it, and holds it while it is lighting the lamp, at the same time the piece, M', has pressed on the pallet, L, and thrown the extinguisher off the lamp. The lamp being lighted, the thumb or finger is taken off M, and the spring, O, brings it back, and another match falls down ready to light the lamp again, when necessary.

This simple and very effective contrivance for lighting lanterns in any weather and any position, and extinguishing them without opening the door, is the invention of Messrs. Roesler & Frey, of Warsaw, Ill., and was patented May 18, 1858. Any information concerning the patent (which they wish to sell) can be obtained by addressing them at the above place, Box 464.

Porcelain Pictures.

A fine opportunity for somebody to make a fortune would seem to lie in the invention of some machine or process for producing porcelain pictures. We allude to the flat plates of porcelain, sold in the china and fancy stores, which, when held between the eye and the light, exhibit pictures more or less beautiful, according to the design. There is an extensive and rapidly increasing demand for these articles ; but at present the entire supply is imported from Europe. We shall probably allude to the subject again.

MECHANICS

INVENTORS, MILLWRIGHTS. FARMERS AND MANUFACTURERS.

FOURTEENTH YEAR!

PROSPECTUS OF THE

SCIENTIFIC AMERICAN.

This valuable and widely circulated journal entered upon its FOURTEENTH YEAR on the 11th of September.

It is an Illustrated Periodical, devoted to the promulgation of information relating to the various MECHANICAL and CHEMICAL ARTS, MANUFACTURES, AGRICULTURE, PATENTS, INVENTIONS, ENGINEERING, MILL WORK, and all interests which the light of PRACTICAL SCIENCE is calculated to advance.

All the most valuable patented discoveries are delineated and described in its issues, so that, as respects inventions, it may be justly regarded as an *Illustrated Repertory*, where the inventor may learn what has been done before him in the same field which he is exploring, and where he may publish to the world a knowledge of his own achievements.

Reports of American Patents granted are also published every week, including *official* copies of all the PATENT CLAIMS. These Patent Claims are furnished from the Patent Office Records expressly for this paper, and published in the SCIENTIFIC AMERICAN *in advance of all other publications.*

Mechanics, Inventors, Engineers, Chemists, Manufacturers, Agriculturists, and people in every profession of life, will find the SCIENTIFIC AMERICAN to be of great value in their respective callings. Its counsels and suggestions will save them hundreds of dollars annually, besides affording them a continual source of knowledge, the value of which is beyond pecuniary estimate.

TERMS OF SUBSCRIPTION—Two Dollars a Year, or One Dollar for Six Months.

CLUB RATES.

Five Copies, for Six Months.....$4
Ten Copies, for Six Months.....$8
Ten Copies, for Twelve Months.....$15
Fifteen Copies, for Twelve Months.....$22
Twenty Copies, for Twelve Months.....$28

Southern, Western and Canadian money or Post Office stamps, taken at par for subscriptions. Canadian subscribers will please to remit twenty-six cents extra on each year's subscription, to pre-pay postage.

For all clubs of Twenty and over, the yearly subscription is only $1 40. Names can be sent in at different times and from different Post Offices. Specimen copies will be sent gratis to any part of the country.

MUNN & CO., Publishers and Patent Agents,
No. 128 Fulton street, New York.

© 1859 SCIENTIFIC AMRICAN, INC.